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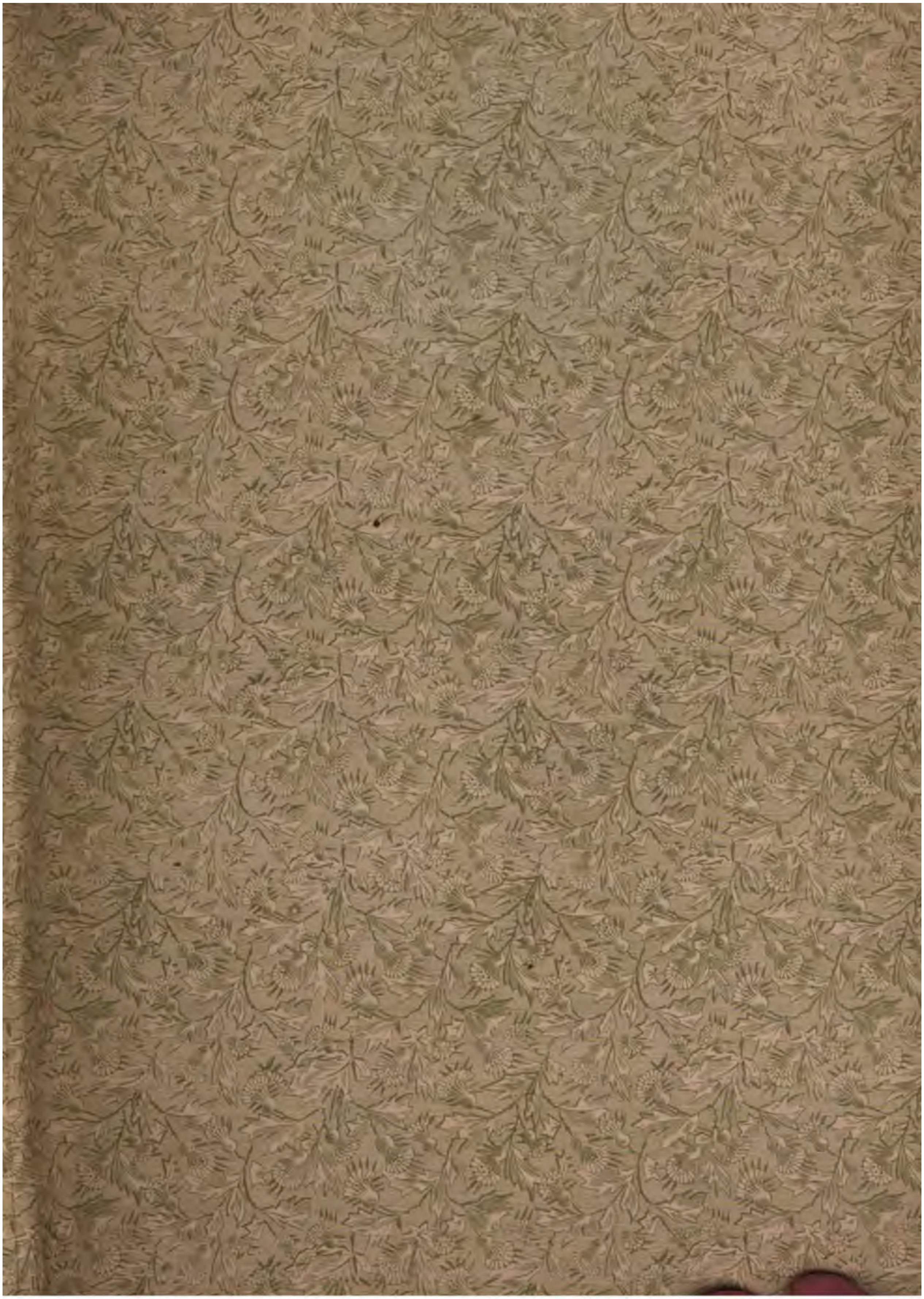

ENCYCLOPEDIA

OF

HOUSEHOLD INFORMATION.

A COMPENDIUM OF FACTS FOR EASY REFERENCE WHICH
SHALL CONSTITUTE A GUIDE TO EVERY DEPARTMENT
OF SOCIAL AND DOMESTIC ECONOMY.

A MANUAL FOR EVERY HOME.

WITH NUMEROUS ILLUSTRATIONS
By H. CLARKSON EVANS.

CHICAGO:
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1890

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PREFACE.

In the preparation of THE HOME GUIDE the aim has been to bring within a comparatively small compass a very large amount of information upon domestic and social economy, useful in every-day life, gathered from the most reliable and authentic sources. The labor has been performed under some disadvantages, and while the editor does not claim that the book is as perfect or complete in all respects as it could be made with a greater amount of space, still the result is a compilation which will hardly fail to prove valuable to those upon whom devolve the important responsibilities of a home.

Of all human institutions the home is the most necessary and the most important. It is at home that mankind chiefly enjoys the results of human endeavors—of effort and labor—and it will not be questioned, therefore, that a knowledge of the true principles of human happiness as applied to home, and its surroundings, is of the highest importance.

The object of this work, as its title indicates, is to supply, in permanent form, for easy reference, facts which shall constitute a guide to every department of social and domestic economy. It contains essential and practical facts for the people, pertaining to selecting, building, and furnishing a home, ensuring domestic comfort, preserving good health and spirits, promoting happiness in the home circle, and adapting means to ends so as to attain the best results at the most reasonable cost. It places within the reach of all, at small expense, a fund of information which otherwise must be obtained by long and wearisome experience, or gleaned from an expensive library.

THE HOME GUIDE is adapted to every range of income. The trite axiom, "Economy is wealth," has a significance for all classes of people. Wealth is found, not in having a large income, but in the possession [illegible]lus after paying judicious expenditures in living. The [illegible]ho has even a small balance in his favor [illegible]eting the demands upon his purse, is [illegible]come is ten times greater, but who spends more money than he receives. How to obtain economically the necessaries of the household, at the same time to augment convenience and comfort and enhance the enjoyments of life, are among the prominent subjects considered in this work; it indicates wherein true economy consists and how by the minimum of expenditure the maximum of comfort may be secured.

Particular prominence is given to hygiene. As there is an increasing interest among the people in regard to the preservation of health, and more inquiry about the means required for its promotion, this subject is kept prominently in view in various departments of the work. The laws which govern life and health receive special attention; the value of a knowledge of essential principles is shown: the benefit of exercise is pointed out; the influence of pure air, wholesome food, and cleanliness is demonstrated, while the departments devoted to domestic medicine are exceedingly useful and valuable, especially in cases of sudden illness or accident. It hardly need be said that many valuable lives are lost every year which a little knowledge applied at the right moment might have saved. The proper treatment of diseases incident to childhood is one of the most important features of the work, and directions and suggestions are given to enable parents and others to guard against the invasion of disease and death in their homes.

There is information pertaining to things that are very often overlooked in the choice of a home, and evils pointed out which ought specially to be avoided. Those who contemplate building will find in this work suggestions as to the best way of planning a house, taking into account the situation and circumstances of the individual; the materials to be employed in the construction of houses are not overlooked, nor the manner in which the necessary work should be done. The surroundings of a dwelling exert much influence upon the pleasures and tastes of its inmates, and THE HOME GUIDE, recognizing this important fact, gives the subject proper attention. So, also, the furnishing and decoration of the home is given the consideration it deserves. Under appropriate heads will be found suggestions relating to furnishing every part of the house, according to the means at command, in the most economical, durable, and pleasing manner, as to the material, shape, texture and color. The portions relating to ornamentation include some of the simplest methods of rendering the home attractive, a knowledge of which enables the inmates, however humble, to find pleasure and gratification for their ingenuity and taste.

There are departments also relating to window gardening and the care of house plants, as well as to other branches of rural taste, which contain facts and suggestions that every one may read with profit. The subject of home recreation and its influence upon the family is considered from a practical standpoint, and the utility of combining instruction with amusement, and enjoyment with health.

This is a brief outline only of the plan and purpose of THE HOME GUIDE. To attempt even an epitome of its contents in this connection is impracticable within appropriate limits. The work is comprehensive in scope and full in detail—a *Guide* in fact, as in name, for every department of the *Home*.

Among the works consulted and drawn upon for information comprised under appropriate heads, are "Downing's Cottage Residences," Dr. James R. Nichols' "Fireside Science," Wheeler's "Rural Homes," "Cassell's Household Guide," Waring's "Farmers' and Mechanics' Manual," "Appleton's American Cyclopedia," H. W. S. Cleveland's "Landscape Architecture," "Bryant's "Forest Trees," Henry T. Williams' "Window Gardening," "The Home," in Putnam's Series of Handy Books, "Every Man His Own Painter," Draper's "Human Physiology," "Till the Doctor Comes," by Dr. George E. Hope, of London, Eng., (Putnam's Series, &c.), "Popular Medicine;" also various eminent medical authorities, etc., etc.

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Fevers of Different Types; When Formed Run their Course; Fever and Ague, or Intermittent Fever; Symptoms and Remedies; Slow Fever, or Nervous Fevers; Symptoms and Treatment; Scarlet Fever; Symptoms of the Disease; Peculiar Characteristics; Distinguished from Measles; Domestic Remedies; The Measles; Symptoms; Treatment; Diptheria; Symptoms—One of the Most Dangerous Diseases; Domestic Remedies; Professional Medical Skill Indispensable; Brain Fever; Peculiarities of the Disease; How Produced; The Usual Remedies; Cramp; Asthma; Apoplexy; Abscess; Billious Disorders; Bladder Diseases; Boils; Bronchitis; Blood-Letting; Carbuncle; Colic; Constipation; Consumption; Catarrh; Child-Birth; Cholera Morbus; Cholera Asiatic; Dysentery; Deafness; Debility; Diabetes; Diptheria; Dropsies; Drunkenness; Dyspepsia; Dimness of Sight; Epilepsy; Erysipelas; Ear Ache; Faintness; Flatulence; Goitre; Gout; Gravel; Heart, Diseases of; Insanity; Jaundice; Kidney Diseases, Lungs, Inflammation of; Lumbago; Menstruation; Mumps; Nails, In-Growing; Neuralgia; Paralysis; Piles; Pleurisy; Rheumatism; Scald Head; Small Pox; Sore Throat; Scurvy; Toothache; Thrush; Ulcers; Varioloid; Vertigo; Warts and Corns; Wens; White Swellings; Whitlow (or Felon); Water in the Head; Worms; Womb Diseases; Etc., Etc.

BONES IN THE HUMAN BODY.

Knowledge of Them Required; Broken Bones; **Fracture of the Skull; Collar Bone**; Broken Ribs Without Wound; Ribs Broken With **Wound**; **Arm Above the Elbow**; Below the Elbow; Hand Foot or Ankle; Hip Joint; **Thigh**; **Cap of the Knee**; Leg Below the Knee; General Treatment of **Broken Bones**; **Dislocation**, or Limbs Out of Joint; Thumb or Finger; **Shoulder**; **Hip**; **Knee, Ankle or** Wrist; Jaw; Sprains.

POISONS AND ANTIDOTES.

Animal Poisons; Vegetable Poisons; **Mineral Poisons**; **Treatment of Various Poisons**; Emetics; Neutralizers; The Stomach Pump.

DISEASES INCIDENT TO CHILDREN.

Convulsions; Diarrhœa; Teething; **Canker**; **Chicken Pox**; **Cholera Infantum**; **Croup**, and Nervous Croup; **Whooping Cough**; **Colds and Coughs**; **Fits**; **Etc.**, Etc.—pp. 257-325.

PRESERVATION OF HEALTH.

THINGS WORTH REMEMBERING.

"An Ounce of Prevention Better than a Pound of Cure;" **A Knowledge of the Laws of Life Necessary**; **Sickness and Death largely due to a Lack of Hygienic Information among the People**; **God's Providence and Man's Ignorance**; **Remote Causes of Disease**; **Cases that Baffle the Highest Medical Skill often have a Hereditary Origin**; Hidden Taints in the Blood; **Many External Causes of Disease May be Avoided**; Various Sources of Sickness; **Pure Air and Exercise Two Important Conditions of Health**; Some **Pernicious Habits in Early Life**; **Nervous Affections and Physical** Infirmities often due to **Indiscretions of Diet in Childhood**; Mistaken Kindness of Parents; **Lurking Poisons in Confectionery**; Some **Pigments Used** in Confections; **Cumulative Poisons.**

CHILDREN—FOOD AND MANAGEMENT.

Healthy Children; **Proper Food and Care**; **Importance of Diet for Infants**; **Evils Resulting from Neglect or Ignorance**; **Natural Conditions Favorable to Health**; **Development According to Natural Laws**; **Frightful Mortality among Children**; **How to Prevent or Mitigate It**; **Care of Infants**; **What is Generally Done for a New-born Babe**; **A Few Plain Truths**; **False Notions of Propriety on the part of some Mothers**; **Nature's Provision for Infants their Best Food**; **Various Kinds of Palatable and Healthy Food for Infants**; **Injurious Effects of Pampering the Appetites of Children**; Farinaceous **Articles of Food**; **Essential Considerations in the Management of** Infants.

IMPORTANCE OF SLEEP.

Sleep a Function of the Brain; We Cannot Exist Without It; Its Importance in Infancy and Childhood; Facts and Suggestions to be Remembered; The Use of Anodynes to Promote Sleep; Narcotic Drug Preparations for Children should be Avoided; The Philosophy of Sleep; A Suspension of Nervous and Muscular Activity During Sleep; Sound Sleepers; Influence of Sleep Upon Vitality; Loss of Sleep; Sleeping at Regular Hours; Inflammation of the Brain, Apoplexy, Paralysis, Insanity, Imbecility, Often Caused by **Loss of Sleep**; Refreshing Sleep **in Sickness.**

EXERCISE.

Exercise and Health; The Value of Physical Culture; Open Air Exercise Muscular Exercise in the Propulsion and Distribution of the Blood; Blood th Great Nourisher of the System; Circulation and Muscular Exercise; Different Kinds of Exercise; Mechanical Employments; Active Amusements; Let the Children Play Out-doors in Good Weather; Power an Important Factor in Health; How It is Obtained; Vigor of Body and Mind Increased by Exercise; Morbid Matters in the System Expelled; Curative Power of Exercise; Walking; Riding on Horseback; Light Gymnastics; Dancing at Proper Times and Places Beneficial; Abuses and Excesses of this Kind of Exercise; Other Indoor and Outdoor Recreations; Cumulative Exercise, or the Health Lift, Etc., Etc.

CHILDREN SENT TO SCHOOL TOO YOUNG.

A Serious Error; In School Too Young; Bad Effects of School Discipline Upon Children under Five or Six Years Old; Infant Prodigies and Physical Wrecks; Uncomfortable Seats at School; Spinal Diseases and Pulmonary Consumption Induced by Bad Seats; The "Triumph" School Desk; Children's Rights, Etc., Etc.

ADULTERATIONS OF FOOD.

A Serious Evil; Frauds in Food; Popular Poisoning; Coffee and Tea; Adulterations of Coffee; Good Coffee; Teas Universally Adulterated; How it is Done; The Characteristics of Good Tea; Adulterations of Sugar; Good Sugars; Adulterations of Milk; Chemical Tests; The Constituents of Good Milk; The Lactometer; Facts About Meats; Potted Meats; Adulterations of Canned Fruits, Sauces, Spices, Yeasts, Vinegar, Syrups, Lard, Etc., Etc.; Common Sense Rules.

Bread from Cereal Grains; Essentials to Support Human Life; Buckwheat; Wheaten Flour as an Article of Food; Methods and Processes; Areated Bread; What Good Bread Contains; Composition of Wheaten Flour; Gluten; Amount of Moisture; Amount of Gluten; Roland's Aleurometer; Robine's Appreciateur; Adulterations; Rye Flour; Barley Flour; Oat Meal; Bean Meal; Buckwheat Meal; Potato Starch and Rice Flour; Ergot; Different Frauds in Adulteration of Flour.

THE HOME CABINET.

GENERAL USEFUL FACTS.

Ammonia, Properties and Uses; Disinfecting Substances and How to Use Them; Precautions Against Fire; What to Do in Case of Fire; Smoky Chimney; Smoke Stains on Marble Mantels; Sweeping and Dusting; Hints to Window Cleaners; How to Make Whitewash; Whitewashing Walls; Facts About Glue; Useful Cements; How to Make Mucilage; Cement for Fastening India Rubber to Wood; Marble Varnish; Varnish for Grates; Varnishes of Various Kinds; Mastic Varnish; Staining Wood and Ivory; Staining Mahogany Color; To Remove Spots from Furniture; To Remove Spots from Floors; To Keep Floors Clean; To Clean Oil Cloths; To Remove Stains from Books; Egg Stains from Silver Spoons; Cleaning Plated Goods; To Clean Alabaster; To Clean Urns; To Clean Decanters and Bottles; To Clean Lamps; To Prevent Lamps from Smoking; Lamp Shades; Lamp Wicks; Management of China Ware; Mending China; Mending Broken Dishes; To Keep Goods from Rust; To Preserve Delicate Steel Articles from Rust; Injuries from Chemicals; Dyeing in Various Colors; Dyeing Feathers; India Rubber Blacking; Superior French Black

ing for Boots and Shoes; Iodine Ointment, &c; Poultices; Beef Tea for the Sick; Vapor Baths; Liniment for Sprains and Bruises; Stings of Wasps, Bees, and Nettles; To Destroy Vermin; Protection Against Moths; To Keep Moths from Fur and Woolen Clothes; To Destroy Flies; Impromptu Mouse Trap; Paste to Destroy Mice; Phosphorus Paste for Rats; To Foretell the Weather; To Make a Weather House; To Make Leather Waterproof; Washing Fluids; Rules for Marketing; Summer and Other Drinks; Temperance; Tattling; Swearing; Instructions to Swimmers; To Distinguish Tapestry Carpet from Brussels.

TO CLEAN AND RENOVATE CLOTHING, ETC.

To Revive Black Silk; To Remove Grease Spots from Silk; To Take Pitch, Tar or Turpentine Spots from Linen or Silk; To Clean Merino, Cloth Clothes or Woolen Stuff; To Clean Ermine; To Clean Swan's Down Cape or Tippet; To Clean Velvet; To Clean Woolen or Fancy Fabrics; Also Delicate Colored Fabrics; Also White Cashmere and White Alapaca; To Clean Colored Fabrics, Muslin Dresses; To Bleach Wool; To Bleach Lingerie, Laces and Embroidery, To Clean Flannel; To Renovate Crape; To Remove Iron Mould; About Lace; About Linen; Glove Cleaning; The French Mode of Cleaning Gloves; To Wash Summer Curtains; Washing Colored Clothes; To Remove Grease from Carpets.

FACTS ABOUT FANCY WORK, ETC.

Crochet Work; Cone Work; Leaf Work; Skeleton Leaves; Imitation Leaves, Bead Mosaic; Crayon Drawings; To Bronze Images: Ivory Ornaments; Sealing Wax Ornaments; Imitating Tortoise Shell; Shell Ornaments; Embossing on Glass; Tasteful Trifles; Knitting of Various Kinds; To Make Card Baskets; Book Slides; Berlin Wool Mats; To Stuff Sofa Cushions: Souvenirs; Stuffing and Preserving Birds and Other Animals; Handsome Curtains at Small Cost; Gold Fish; Canary Bird; Wax Flowers, Fruits, Etc.

ABOUT WATCHES AND JEWELRY.

How to Manage Watches; To Clean Gold Watch Chains; To Clean Precious Stones; Gems and Jewelry; How to Distinguish Artificial Gems; To Ascertain the Purity of Silver.

THE TOILET.

Care of the Hands; Chappped Hands and Lips; Skin Discolorations; Sweetening the Breath; Perfumes; Washes for the Complexion; Pomades; Eau de Cologne, Etc.; Otto of Roses; Bay Rum; Various Hair Oils; Care of the Hair, To Promote the Growth of the Hair; To Remove Pimples; Magnesia; Pearl White; The Teeth; Dentifrices; Hair Brushes; Cosmetics.

PICTURES AND PICTURE FRAMES, &C.

Household Care of Pictures, Gilding; To Revive Gilt Frames; To Gild Leatherwork; To Clean Picture Frames; To Remove Stains; To Prevent Flies from Soiling Pictures; Hanging Oil Paintings; To Clean Looking Glasses, Etc. Etc —pp. 430—500.

THE HOME GUIDE.

SELECTING A HOME.

Human existence implies the necessity of food, raiment and shelter. A habitation is scarcely less important to life than the questions of "what shall ye eat and wherewithal shall ye be clothed?" Happiness, in civilized countries, largely depends upon the comforts and conveniences with which a home may be invested.

Every man in this country, especially if he has a family, should possess a home of his own; and generally this may be secured in a few years by industry, frugality and prudence. In large towns and cities, the money expended for rent by persons engaged in ordinary avocations will, in a few years, purchase a modest home. To be dependent upon landlords year after year for a habitation is often inconvenient and unpleasant, besides being very poor economy. There are many vexations and annoyances, which few renters escape, attending their experience as tenants of other people's houses and tenements, while the burdens of taxation for municipal purposes fall mainly upon the tenants; as landlords charge the taxation imposed for public improvements on them to the rent-roll, and it therefore comes out of the pockets of the tenants.

In a house of his own, one feels not only that he is less dependent than when occupying a tenement belonging to another, but there is an incentive to improve and beautify a home; to make it attractive and thus add to its value—a motive not often present when a man lives in a rented tenement.

From every point of view it is advisable for a man of family, when he has found a permanent place of residence, to determine to provide a home for those dependent upon him. Whether in a town or the country, this is advisable, and the reasons for it are so obvious that it scarcely seems necessary to refer to them. Nevertheless hundreds and thousands of men, whose intelligence precludes the idea that they do not understand or appreciate them, live on, year after year, without taking any steps towards accomplishing such a result

The desirableness of securing a home being granted, we proceed to consider a few general propositions relating to the selection of a place for a home and the construction of a house.

Gervasse Wheeler succinctly states the excellencies of a home to be: 1. Convenient arrangement; 2. Facility of construction and repair; 3. Perfect protection from heat and cold; 4. Adequate means of warming and ventilating; 5. Congruity with the scenery around. The first thing to be considered is the selection of a site. This depends upon the circumstances of each individual case. If it lie in the country, a somewhat elevated location has many advantages, among which may be mentioned attractiveness of view, salubrity ot atmosphere, drainage facilities, etc. But such a site should not be chosen so that it is difficult of access; and it should be protected or sheltered from the northern and western winds and storms, by higher grounds or belts of timber. Sometimes, nevertheless, locations in valleys are as bleak as an unprotected hill, the wind sweeping through them with a power unknown on the summits of the hills. Of all varieties of hilly surface, says Mr. Loudon (who is recognized among the best authorities on this subject,) the most desirable site is where a prominent knoll stands forward from a lengthened ridge, and where the latter has a valley with a river in front, and higher hills rising one above another behind. One of the worst sites is the steep uniform side of a hill, closely surrounded by other hills equally high and steep.

Very much has been written upon this subject—which is certainly an important one—but it is not the object and scope of this work to go into the details pertaining to the selection of a site. A few primary principles under this head will serve the present purpose.

In choosing an aspect local and climatic considerations should govern the selection. Some of these will be mentioned further on. Here, in addition to what has already been said about protection from prevailing winds and storms, it is proper to offer a word of caution against selecting a site on the north side of a high hill or ridge where the direct rays of the sun would be excluded a great portion of the time. Let it not be forgotten that sunlight everywhere is highly necessary to health and comfort. That this matter is not generally understood is shown by thousands of locations, which have evidently been selected with no regard to its importance, or influence upon health and comfort. It is no uncommon thing to find a house in a northern climate, located upon the north or west side of a hill or down deep in a valley where the winds and storms beat pitilessly upon it, chilling and oftentimes eventually killing its inmates. The glorious sunlight is shut out in the morning, and its genial rays do not shine long enough upon the dwelling to drive the dampness out of it.

The necessity of sufficient sunlight and a dry location is illustrated in the case of two brothers, healthy and strong men, who married sisters as healthy as themselves. One lived on the old homestead, on the southern slope of one of the most beautiful and well-drained hills in the vicinity. The whole house was bathed in sunlight the whole day, and consumption did not touch any of the young lives under its roof The other brother placed his house not far off; but he selected a site on a grassy plain covered throughout the summer with the rarest verdure. In its front was a large open "common." In the center of this, water oozed up from the split hoofs of the cows as they came lowing homeward at evening, and the barefooted boy who was driving them used to shrink from the place, preferring to make the circuit of ground rather than follow the lead of the kine. Back of the house was a level meadow reaching to the very foundation of the building. Through this meadow crept sluggishly the mill stream of the adjacent village. Still further all these surroundings were inclosed by hills. The life-giving sun rose later and set earlier than upon the other fair homestead. Until late in the forenoon and long before sunset left the hill-side home, damp, chilling emanations arose from the meadow day after day, enveloping the tender forms of the children who were trying in vain to grow healthy within them. But all effort was useless. Large families were born under both roofs. Not one of the children born in the latter homestead escaped disease, whereas the other family remained healthy.

Nothing can be more certain than that damp and noxious exhalations and miasmatic vapors in the vicinity of, or surrounding dwellings produce a vast amount of sickness. People sicken and die from this cause, when it is not suspected. Hence the necessity of a better knowledge of the laws which govern life and health. In selecting a site for a dwelling other important considerations must not be overlooked, if comfort, health and happiness are expected. Sometimes a location may be considered excellent in all respects, when a single objection should decide the point against it. A case occurs to us in which the choice of a location appeared to possess every condition of excellence. In all particulars, save one, it was an eligible site; but that one was fatal. Not far away was a pond surrounded by low grounds. The prevailing southwest winds swept across this marsh, became charged with noxious vapors, and in their course passed the new dwelling. Chills, remittent fevers, and other disease afflicted the family, and eventually some of its inmates died. Others were feeble and sickly as long as they remained, and only recovered by a change of residence.

Let it be borne in mind that no combination of advantages can compensate the lack of a healthy atmosphere. Unless this defect is clearly within control, a location where there is danger from it, should not be thought of. Avoid the proximity of stagnant swamps, bogs, marshes and sluggish streams; and, indeed, all situations where the soil is too retentive of moisture. Drainage may obviate this latter, in some instances, but that is attended with expense which many persons cannot afford.

When the surroundings or location of the place selected will permit of it, place the dwelling so that a view of a pleasant landscape may be had; and if there are trees growing on the site, some of them may be not only ornamental but useful in furnishing shade to portions of the dwelling, or supplying a cool retreat on a hot mid-summer day. It is not unfrequently the case that all trees of natural growth on a place are cut down. If they are objectionable from their location, form or kind, it may be well to remove them; but if they are of good varieties, those that serve a useful purpose should be retained. Trees to the north and west will screen the home from prevailing winds, but such trees should not be too plentiful or too near as they harbor too much dampness. Enough shade is always to be desired, but too much should not be tolerated. If the place is bare of trees, no time should be lost in supplying them of such varieties as are most desirable, where they should be planted with a due regard for utility and artistic arrangement.

The subject of ornamenting the grounds around the dwelling with trees, shrubbery and flowers is appropriately treated in another place, in THE HOME GUIDE.

A CONVENIENT HOUSE.

It is not the design of this work to furnish details for the construction of houses. The wants, tastes, and circumstances of different persons are so varied in this behalf that an attempt to meet them in the limits of THE HOME GUIDE is impracticable. There are numerous books upon architecture which may be consulted with satisfaction and profit by those who intend to build, in which may be found information and explanations suited to each one's circumstances or tastes.

But in any case before one begins to build he should have a well-defined idea of what he wants; then employ competent men to build it, tell them distinctly what he requires; and see that they fulfill their contracts.

If an architect is employed, do not leave everything to his judgment and discretion. And here we submit a remark which has often been used, but will bear repeating as long as houses are to be built, to wit: that a man's wife is one of the best advisers in regard to planning a house. She is to be the presiding genius in the prospective home. She it is who is to make it an earthly kingdom; the place of all others on earth to be desired—a cheerful, happy home. As the rooms, the closets, the pantries, garrets, etc., are under her immediate supervision, certainly she should be consulted in their arrangements, and her knowledge of the requirements of housekeeping is always valuable in drawing up a plan.

The very first thing to be considered after the location is decided upon, is convenience and comfort. Never sacrifice these to appearance or fashion, or uniformity in a neighborhood. It is as easy and as cheap to build attractively or neatly and preserve these primary requirements, as to construct an unsightly and forbiding house. It happens not unfrequently that a contest arises with the builder in regard to carrying out one's plans. It sometimes happens that his suggestions are judicious and had better be adopted, but if, after listening to them patiently there is nothing to be gained by their adoption, let him understand that your own plan must be adhered to. Having previously considered and matured the plans of your dwelling, looking well to light, ventilation, and comfort of your home, insist on having your house as you want it.

There is no end to badly-arranged and badly-built houses, and the explanation thereof generally is found in the lack of sufficient knowledge of what is required in building, on the part of both those who have had them built and the mechanics who constructed them. Hence; thoroughly mature a plan before commencing to build.

The next step is to see that the material put into the house is in all respects suitable. This is of very great importance, as on it depends the expense of keeping the house in repair. The use of timber not properly seasoned, of bricks improperly burned, and indeed very many *shams* which are daily palmed off for sound and good articles for building purposes, prove only a source of subsequent discomfort vexation, and expense.

While it is not designed to give either outline or detail of various styles of houses in this work, it is not possible to lose sight of the fact that of the thousands of dwellings which are erected annually, in this country, and especially in the newer portions of it, by far the largest number are built by persons of moderate means. The style that is most popular is the cottage. Cottages are of almost infinite variety in plan and arrangement. It is proper, therefore, to indicate a few of the most approved styles, possessing taste and convenience in their ornamentation and arrangement, and these are sadly wanting in very many of the homes which yearly spring up in all portions of the country. We present, in this connection, three illustrations of cottages, which are tasteful in design, convenient in arrangement, and, withal, can be built at no great cost. These designs are selected from a large number in the pages of Downings' "Cottage Residences," a very valuable work published by John Wiley & Son of New York City. The first illustration (Figs. 9 and 10) represents a cottage in the English or rural Gothic style. The object in view in this design is internal convenience. There are many families, some composed of invalids or persons advanced in years, who have a strong preference for a plan giving the kitchen and at least one bed-room upon the same floor with the living rooms, and in which there is little or no necessity for ascending or descending stairs. A glance at the plan of the first floor will show how this idea is carried out. The second story contains two large and two small bedrooms. The elevation is in the English cottage style, so generally admired for the picturesqueness evinced in its tall gables ornamented by handsome verge boards and finials, its neat or fanciful chimney tops, its latticed windows and other striking features. The material for the construction is brick and cement, colored in imitation of Bath or Portland stone, or smooth brick colored after some soft neutral tint. The window frames, porch, veranda and verge board may be painted the same as the walls, and sanded or else grained in imitation of oak. About an acre and a quarter of ground would be a suitable plot for this dwelling. One half of the area in the rear might be devoted to a garden for fruits and vegetables, and the remainder laid out as a lawn with shrubbery and flower beds.

The same style of cottage in wood is less expensive, and so far as ornament and drapery are concerned, they may be elaborate or plain as best suits the taste or means of the owner.

There are many situations which may be well chosen for the site of a dwelling on the bank of a river or margin of a lake. For such a site the design under the caption of "A Picturesque Brick Cottage," is well adapted, especially if the location be between the public road and the river or lake. This is a more pretentious structure than the first, and more expensive. To those whose means admit of expending from five thousand to eight thousand dollars, this style will be found to meet the requirements of taste and convenience. The general outline plan, however, may be modified, and much of the interior arrangement preserved, where a more economical house after this style is desired.

The front porch is large and is raised but one step from the ground. From it you enter the vestibule, which is separated from the hall by an ornamental screen. The main hall is twelve feet by twenty, and in it are the stairs to the second story, which are three and a half feet wide and of easy ascent. The library is on the right of the hall, and measures fifteen feet square, and opening out of it by wide sliding doors. On the south side is the flower alcove, which is in fact a small conservatory, having large windows occupying nearly the whole of the sunny side. This alcove is intended to be filled up neatly with flower stands, and the doors connecting it with the library are entirely of glass set in a light frame like French casement windows, and are made to slide on brass-ways into the partition on either side.

Next to the library, occupying the south-east corner of the house, is the parlor, which is sixteen feet by twenty, opening upon the veranda on the east by French casement windows, and having a bay window projecting from the south side. This room connects with the library by folding doors, and with the hall by a short passage, as shown on the plan, in which is a niche for a piece of statuary. The dining-room is on the northeast corner, and measures fifteen by nineteen feet. This room is octagonal in shape, and in the corners are small china closets. A pantry adjoining has a dumb waiter rising from a corresponding pantry below, fitted up with modern conveniences. The stairs leading to the kitchen are under the principal flight.

The basement story is divided in the same manner as the principal story. The partitions are all of brick, affording ample support for those above. The kitchen is under the dining-room, and there are open cellars connecting with it.

These three chambers in the second story, measuring respectively, fifteen by seventeen, fifteen by twenty, and fifteen by fifteen feet; all are well lighted and have ample closet room. Over the vestibule is a servant's room, and over it in the tower, a place for the storage of trunks, etc.

The interior finish may be of the simplest character, slightly stained and shellacked — clear white pine in all except the principal story, which may be of more expensive wood.

The material may be of brick or wood, but where bricks can be used and trimmed with blue stone neatly dressed, the bricks for the outside facings being selected for uniformity of tint and sharpness of outline and laid in dark-colored mortar, the effect will be much finer than in any other style

In the next engraving (Figs. 105 and 106) we present a plan for a plain house where abundance of room is more of an object than elaborate ornamentation. The decorations are few and simple, and in keeping with the general effect of the structure. The veranda at the entrance is very broad, and the entrance hall large and roomy. The dining room has a bay window and is conveniently situated as regards the kitchen. The second story contains five chambers and the attic may be divided off into three large rooms. The cellar extends under the whole house. A few vines may be trained to climb the walls, and some rustic vases and other ornaments arranged before the front will give a tasteful appearance to the building.

SMALL COTTAGES.

It is often the case that the means of persons are not sufficient to build in the style of either of the designs given, and yet are enough to secure a smaller cottage. Or it may be that one can make arrangements by which a small cottage can be built and a home secured upon easy payments, as is frequently done in various cities and towns. If a lot can be secured, a small cottage may be located so that at some future time a larger house may be built in front of it, if desired.

There are various designs for these small cottages, but it is hardly necessary to refer to them in detail. The location, size and surroundings of the lot or plat of ground upon which the cottage is to stand, as well as the number and age of the inmates of the family will govern largely in this matter.

When the family consists of only two or three persons the following is a very good design, for a cottage when it is intended to add a front·

The plan of the first floor consists of a main room 14 feet by 20, which serves for living room and dining room; a pratition separates it from a pantry and the stair and cellar ways; in the rear is the kitchen 12 by 14 feet, and a porch of the same length. A verandah runs along the the side of the cottage from the front to the kitchen porch. The entrance from the kitchen to the main room is through the pantry. The chamber of this cottage contains a large bedroom with a closet over the stairway; a hall and a smaller bedroom. The cistern is under the kitchen porch.

A nice suburban cottage for a small family is given in "Cottage Residences," (before referred to), and without a diagram or figure of the plan, we will describe it as nearly as we can.

On the first floor the plan contemplates a parlor or living room 16 feet by 21, having in communication with it a closet for books, and also a pantry, each 4 feet by 8 feet. A hall 6 feet wide divides this portion of the cottage from the kitchen and a bed-room, the former 14 feet by 16; the latter 12 feet by 16. The stairway is in the hall. In the plan of the chamber there are four bedrooms of good size and one of small dimensions. Cellar room is obtained under the living room, closets, and hall; of course it is not necessary to excavate under other portions of the house, which fact lessens the expense of building foundation walls. The kitchen is placed as far from the living room as possible to avoid as much as may be, the smell arising from cooking.

"Although this cottage," (says Mr. Downing), "is of moderate size, yet, to a family of small means, leading a comparatively retired life it will afford a great deal of comfort, and even a considerable degree of taste and neatness. The parlor or living room is comparatively large; its outline is agreeably varied by the bay window opposite the fireplace; the closet of books connected with it indicates a certain degree of mental cultivation * * *; the pantry opening into the living room renders it equally eligible as a dining room."

Further details must be left to the taste and wants of the owner.

The Home Guide invites the attention of those who desire to acquire homes, but who have not the means to purchase one, to the value of building associations, when these auxiliaries to the homeless are properly organized, and conducted with honesty and ability. An intelligent and eminent authority on this subject, after speaking of the advantages they confer upon poor men in affording them opportunities to secure homes, goes on to say: "Building associations promote or create habits of economy or industry, and have a direct tendency to make men better and more useful citizens. The man who knows he has a safe place to invest a few dollars every month, and thus gradually accumulate a capital, will be more likely to work steadily to obtain money and less likely to expend it uselessly, than he who has no such object in view; and he who has paid rent all his life, but who now for the first time sees a fair, almost certain prospect of owning a place that he may call his own home, will strain every nerve to accomplish so desirable a purpose."

One of the desirable forms of these associations is that adopted by the best associations in England. It has the merit of being advantageous to those who wish to build and also to those who wish to invest their surplus money. Under this plan certificates of stock whose par value is $100 are issued to stockholders who pay 50 cents a month upon each share of stock in their possession. Each month the money thus paid in is loaned to the highest bidder upon real-estate security, the borrowing member paying the interest in monthly installments. The association continues until the assets reach $100 per share, and then each non-borrowing member receives the par value of his stock, and borrowing members have all their indebtedness cancelled.

To show how a person can build a house in an association upon this plan with no more, or very little more, means than would be required to pay rent for the same kind of a house, the following is quoted from a digest issued by one of these associations now in operation in an interior city in Illinois:

"For example, dwellings in this city, suitable for a family, say of six persons, rent for from $10 to $15 a month—say $12.50 as the average. This would be $150 per year, or for seven years, $1,050, with 'nothing to show it' at the end of that time.

"Now, suppose the same man owned a lot worth say $250, he can build a very fair house for $600. This he borrows from the association and pays say 40 per cent. premium, or $240; this will make $840, for which he gives note and mortgage. In order to obtain this sum he must own at least 9 shares; his payments will be dues $54 per year, interest $84 per year, or $138 per year in all, which will be just $11.50 per month; this for seven years is $966. Now add to this seven years' interest on the value of the lot $250,=$175, and say $125 for taxes and insurance, and we have a total of $1,266, from which must be deducted $60, the difference between the value of his stock and his note to the association, and we have as the net cost of the house and lot, $1,206, or $156 more than he would have paid for rent."

BAD OR IMPURE AIR.

It is not a little surprising that so few of the human race, comparatively, possess any definite knowledge of the laws upon which life and health depend. If the amount of suffering and disease resulting from unwholesome food and unwholesome air, could be fully ascertained, no doubt it would cause very great astonishment. Bad and impure air, although nature is constantly struggling to counteract its influence, is certain to make inroads upon a healthy constitution, and the violation of the primary laws upon which health and vigor depend, is sure at last to bring a penalty in the shape of impaired health and constitutional infirmities. This is forcibly set forth by Dr. James R. Nichols in his "Fireside Science," and a few extracts, from that excellent work, are in point:

"Among the many detrimental influences to which human beings are subject, no one is greater than rebreathed air. Whilst there are tens of thousands who suffer through this agency involuntarily, there are other tens of thousands who might, if they would, escape from its baneful influence. There is bad air in churches, lecture-rooms, theaters, school-rooms, parlors, bed-chambers, etc., which ought not to be present; or if, when occupied, the air of these rooms *must* become vitiated, a remedy should be sought, to remove the evil. Certainly, enough has been written about ventilation to arouse public attention to its importance, but, after all, little heed is given to the matter in buildings, public or private.

"Let us reflect a moment upon rebreathed air. What is it? It is, strictly speaking, one of the excrementitious products of the human organism. It is a mixture of gaseous bodies which have entered the system, been subjected to chemical changes, then rejected as a waste product.

"Rebreathed air is the only excrementary matter thrown off by men and animals which is not positively abhorrent to all the senses; which is not cast away and shunned by all classes — the ignorant and the learned, the cleanly and the uncleanly, the civilized and the savage. A delicate and fastidious lady will spend hours in a crowded theater, ball-room or lecture-room, and take into her lungs a gaseous mixture which has already traversed the air-passages and impinged upon the lung cells of perhaps hundreds of men and women. If she should learn that her tooth-brush at any time had come in contact with the surfaces over which this air passed, it would be speedily cast aside, and a new one purchased.

"But it is the chemical change which results in air when respired that renders it unfit for further use. It is reasonable to suppose — in fact we know — that rebreathed air is little less than poison to the blood. Consumption and scrofula are found in intimate connection with imperfectly ventilated sleeping apartments, living rooms, etc. A vigorous constitution may fight bravely and persistently against the influence of the poison, but the crash comes at last. No one can subsist for many years upon rebreathed air.

"Animals suffer from it as unmistakably as man, and similar diseases are produced in them. The lions and tigers, and bears and hyenas, confined in menageries kept close and warm, die speedily of consumption. True tubercle is produced; weakness, emaciation, death results. It may be that the carbon is retained unoxidized, and by further chemical action is forced into new combinations, by which bodies are formed of a poisonous nature, or which act the part of a ferment in the blood.

"We do not know precisely how rebreathed air produces its deleterious influences; nor is it worth while to stop to inquire in this discussion. It is certain that its effects are fatal to health. It would be absurd to assert that the frightful prevalence of consumption is due entirely to this agency, as all intelligent observers understand that there are many causes operating to produce or develop this disease. It is nevertheless probable that impure or rebreathed air is the greatest evil-inducing agent, rendering pulmonary affections fatal. The crowded, badly ventilated school-room is often the place, where, early in life, rebreathed air commences its deadly work. Not one school-room in a hundred, in this country, is a fit place in which to confine children six or eight hours of the day. The little ones are herded together in a promiscuous crowd; those of tender years and those more advanced; the feeble and the strong; the sickly and the well; are all subjected to the same hours of study, and the same discipline; and all breathe the same deleterious air. The hardy and the strong may be able to resist the influence of the poison; the weak and tender ones grow pale and haggard, and struggling on through their school days live, perhaps, to the age of puberty, then drop into the consumptive's grave. Will parents never awake to the enormity?

"Small ill ventilated sleeping-rooms, in which rebreathed air is ever present, are nurseries of consumption. These are not found alone in cities and large towns, or among the poor and lowly. Well-to-do farmers' daughters and sons in the country — those who live among the mountains of the New England States, where God's pure air is wholly undefiled — are victims of consumption. How is this explained? Look into their bedrooms, examine into their daily habits of life, and the cause is made plain. Old-fashioned fire-places are boarded up; rubber window-strips and stoves have found their way into the most retired nooks and corners of the land; the imprisoned mountain air in the country dwelling is heated to a high point and breathed over and over during the days and nights of the long winter months. It is certainly true that the girls in the country take less exercise in the open air, than those residing in cities. They appear to be more afraid of pure cold air than city girls. Consumption is not more rare among the females in the country than in cities, in the present age. It was not so formerly. The declarations of grandmothers and old physicians go to show that fifty years ago consumption was hardly known in the rural districts. The wind whistled through the dwellings then; the fire blazed and roared upon the hearth. Half the time, in the cold winters, the backs of the inmates were freezing while the front parts of the persons were roasting, and yet there was less rheumatism than now and no consumption.

"Whilst we have made changes in dwellings, workshops and public buildings which operate to sadly deteriorate and confine the interior air, the outside atmosphere is just as pure, just as healthful, as in the days of our ancestors. Let us adopt means to secure a full measure of this pabulum of life, clear, undiluted, uncontaminated, day and night, during the hours of sleep and study. Let us live as much as we possibly can in the open air, and the measure of health will be greatly increased, and life prolonged."

And this brings us to the subject of the ventilation of our homes.

VENTILATION.

Every room in a house should possess the means of ventilation. Two processes are embraced in accomplishing this object, to wit: the free admission of fresh air, and the removal or escape of that which is vitiated or impure; and in order to be perfectly satisfactory these processes must go on without annoyance to the occupants.

An opening in the chimney, near the ceiling, provided with a valve or register, is the simplest and readiest method of removing foul air. For this purpose the device known as the Arnott valve is generally recommended. It is simply a cast iron box supplied with a valve so constructed that it remains open while there is the slightest pressure of foul air from within, but closes at once against any current in the opposite direction. This device is very easily incorporated into a chimney in building, or can be readily inserted afterwards.

This, however, does not always provide a means of carrying away all the deleterious properties of vitiated air. Carbonic acid gas is generated in a close room. A person takes into his lungs more than two hogsheads of air per hour, if it can be had. The body retains most of the oxygen, and there is thrown out instead nearly an equal bulk of carbonic acid gas, which is poison. This gas is heavier than common air, and while the upward currents take away a portion of it, a portion descends and forms a stratum in the lower part of the room. Open grates and fire-places help to draw off a portion of this gas, but dose not remove all. An opening near the floor of the room in the fireboard, that is, if the chimney current is strong enough, will render its removal easy. A wire gauze may be used over the opening, with a curtain of oiled silk behind it to serve as a valve. But where they are practicable, apertures connected with downward flues are generally more serviceable.

The removal of impure air being provided for, a partial supply of fresh air finds its way through doors occasionally opened, and accidental sources. A sufficient quantity may be admitted by lowering the upper sash of a window, but this is often disagreeable as well as dangerous. A better way is to remove a pane of glass from the row in the sash farthest from the fire, and supply its place with a perforated plate of zinc, or a *louvre* made of tin, zinc or glass. with hori zontal openings or slats like a venetian blind. Fresh air, however, is best provided by connecting air chambers with the fire-place or grate, so that it may be warmed before it is thrown into the room.

So much from a sanitary point of view, depends upon this matter, that its importance cannot be too strongly urged upon the attention of people everywhere. More specific information is given therefore, showing how to secure perfect ventilation.

Health depends, then, very much upon proper ventilation and to be comfortable and healthy a home must have suitable provisions to supply artificial heat in winter, and the means of securing fresh pure air at all times. The general method of obtaining warmth in cold weather is by means of air-tight stoves. It requires care to keep the temperature of a room at or near a certain point, and it happens very often that the hot breath of what Dickens, when speaking of these stoves, called the " Household Demon," renders the room very uncomfortable. An open door or window is the means by which the temperature is usually lowered. The cold air becomes heated in turn and another draught is admitted. And thus there are sudden transitions in the temperature, which are far from being conducive to health. As the air is decomposed it falls by reason of its weight to the lower portions of the room, and after a time, strata upon strata accumulates until it is inhaled by the inmates of the room. It is estimated that in every eighteen respirations a gallon of this fetid and poisonous air is taken into the lungs.

The chemical change resulting when air is respired renders it unfit for further use. Rebreathed air is poisonous to the blood. Dr. James R. Nichols, who is high authority, says that consumption and scrofula are found in intimate connection with living rooms, sleeping rooms, school rooms, etc., which are imperfectly ventilated. A vigorous constitution may fight bravely and persistently against the influence of the poison but the crash comes at last * * True tubercle is produced; weakness, emaciation, death, result. It may be that carbon is retained unoxidized, and that by further chemical action, it is forced into new combinations by which bodies are formed of a poisonous nature or which act the part of a ferment in the blood.

Open fire-places materially lessen this evil, but do not entirely remove it. But the means may be provided for the escape of the foul properties of this vitiated air, by means of air ducts and flues, which can be easily provided, when building a house.

Dr. Wyman, one of our eminent scientists, has laid down five distinct rules in ventilating dwellings which are here given:

1. That each room fifteen feet square, for the accommodation of six or eight individuals, should have a flue for the escape of foul air, either in the chimney or elsewhere, of at least one hundred inches in area. A bed-room should have an outlet of nearly the same dimensions.

2. An inlet for fresh air should be provided for each room or bed-room.

3. That fresh air in winter should always be moderately warmed before it is introduced into apartments.

4. That all apertures for the admission or exit of air should be provided with valves.

5. In summer, nearly all the ventilation will be produced by the opening of doors and windows. It is here supposed that the flues are constructed in the ordinary manner, and receive no heat from neighboring flues; if such warmth is received the draught will be proportionately increased, and the flues may be diminished.

For the escape of the upward flow of vitiated air, openings should be made near the ceiling, such openings connecting with flues leading into the chimney, or a shaft to conduct it away. In the construction of these flues, a perpendicular direction should be observed, where practicable, as abrupt turns or shoulders, are not desirable. If, however, the house is warmed by a furnace, an escape flue and air chamber may be constructed through which the smoke-flue of the furnace may be led. The heat and radiation of the smoke-flue would cause expansion and constant motion to the air in the flue and air-chamber, producing a current strong enough to draw off the impure air from all rooms in the house, provided, of course, they were supplied with connecting flues.

To explain more fully this important matter of providing necessary ventilation by the use of flues, the subjoined paragraphs from Wheeler's "Rural Homes," are apposite:

"The action of the air in the room thus provided with apertures for escape and supply of air will be as follows: As it rolls in volumes of warmth into the room, it will expand and ascend, moderately, however, because the top openings must not be too large for undue escape of heat. As it becomes used, the deoxygenated portions having a heavier specific gravity than the pure air, will fall towards the floor, and be drawn off by air-ducts and dissipated below. The lighter, heated air also expelled from the lungs will escape into the apertures above, as will also all superfluous heat, the apertures in the ceiling being provided with regulating valves, so that, guided by a thermometer within the room, its occupants may graduate the supply *from* the register and escape *through* the flue.

"These apertures for the upward escape of air may be furnished with one of Arnott's Patent Ventilating Valves, a simple and most effective little article, and now furnished by most hardware dealers with great improvements in external form and appearance, and in the method of acting. This ventilator is provided with a balanced valve, which closes instantly at the slightest puff of air from above; hence effectually preventing downward draught, or the escape of smoke into the room if placed in connection with an ordinary smoke-flue. A regulating lever is also attached by which the opening of the valve and consequent size of the aperture of escape may be adjusted at will. The outer portion which comes flush upon the wall might be made of any form or ornamented at pleasure. The box is let into the wall, so that the outside face may come even with its surface. The price for one generally used, is three dollars, other and more ornamental forms are in proportion.

"The flue for downward escape of impure air may conduct into any part of the cellar, or even into the open air, and an ordinary register, or simply a perforated metal front, would be all that is needed within the room.

"The form and nature of the flues themselves require attention. If built of stone or brick, their inside surfaces should be pargetted or plastered, or the roughened sides will too greatly impede the passage of the air by friction. A circular, elliptical, or square with bevelled corners are more desirable forms than the narrow parallelograms usually employed, but on account, not so much of expense, as the unwillingness of masons to depart from established usage, although cylindrical flues are very commonly used in England, and are found to be more cheaply built.

"But the mere provision of these flues is not all that is necessary, nor would the method of ventilation here described be sufficient except during such seasons as will allow the use of a furnace or fire. The air will not ascend of itself into these flues, nor will it descend and be discharged without some motive power being given to it. This motive power, when a furnace or fire is in operation, can be obtained by the radiation of the artificially heated air, and all that will be necessary is to terminate the flues that lead above the building with a 'cowl' or 'wind-guard,' to protect from draughts of air. In his admirable and invaluable report upon 'Ventilating Buildings,' Dr. Bell, of the McLean Asylum for the Insane, near Boston, says: 'Any flues depending wholly upon the action of cowls or turn-caps in any of their numerous forms, are totally unequal to the demands of a constant, reliable ventilation. Those ventilators which are so constantly advertised to the public as *at all times* causing circulation of air within the building cannot therefore be depended upon — they will only assist — but unless used in conjunction with other means their action will only be when there is a current of air flowing across the roof, and bearing upon the sides of the ventilating cap employed. The best ventilating apparatus that is made, is so carefully adjusted as to take advantage of the slightest breath of air that stirs.

"The reliable means, therefore, to be employed is this: One of the escape flues from the room must lead into a shaft which may ventilate the whole house very easily and economically, and in the following manner: At all times of the year culinary operations demand a heating apparatus, giving a constant, though, perhaps, varying degree of warmth. The discharging smoke-flue from this, conducted into a large shaft, would *at all seasons* produce motion in the column of air therein contained, and this, aided too by a ventilating cap of extra size placed at the top of the shaft, would draw off from all the rooms that could be brought in connection with it the vitiated air, from both *above* and *below*.

"Let one of the upper apertures communicate with the shaft, to be used during the summer — let one of the downward shafts also so communicate — and the other, left as before, but *kept always open*, would supply cold fresh air to the lower portion of the room, a thing so necessary, that it seems strange builders should only permit cracks, or the occasional opening of doors, to admit what the first principle of pneumatics requires, it being impossible that vitiated air can escape, when no fresh air can take its place.

"The shaft spoken of in connection with the kitchen fire may be thus supplied with hot air: A large metal chest or chamber, supplied with fresh air from behind, should be built into the chimney of the kitchen, or other room where fires are daily used. This chamber must be placed back of the fire-place, stove, or other cooking apparatus, or over the boiler, if hot water bathing apparatus is provided. It must be capable of containing not less than ten cubic feet of air, and from its top a pipe, not less than six inches in diameter, would lead into the discharging flue intended for ventilation, and then diminished so as to leave around it, in the shaft, a space of at least two inches in the clear, each way. Thus diminished, it should extend upward in the flue for at least ten or fifteen feet.

"The radiation thus caused will produce a sufficiently strong current to draw off from the rooms connected with it all impurities of atmosphere, as before explained.

"In many parts of this country, and especially in the Southern States, a summer kitchen is used, which is detached from the house. In such a case, it is more difficult to obtain the necessary motive power for successful ventilation, but as the smoke-flue from the kitchen might be led sufficiently near to the house to permit the erection of a lofty shaft for the especial purpose of drawing off its foul air, the same principle can be employed. The air-ducts cannot be led to the kitchen if detached, on account of the almost impossibility of drawing air without an immense force in a horizontal direction, but the hot escaping air from the fire-place can more easily be led, and if the shaft be lofty (which some such feature as a tower or corner turret would allow it to be) and its top be terminated with one of Janes' most powerful ejectors, there will be little difficulty in obtaining the motive force requisite.

"A very simple means of ventilating a room only occasionally used, is by placing a lighted lamp in an ordinary flue, providing the aperture with one of Arnott's valves to prevent downward draught. The heated air from the combustion of the lamp will produce an upward current, and thus ventilate the room without in any way producing increase of temperature by the burning of the lamp."

Mr. Wheeler has contrived a little apparatus for this purpose — of which the following is a description:

"The whole apparatus is comprised in a metal screen, intended to supply the place of an ordinary fire-board at such times when the grate is not used. The lower portion is open, for the escape of the foul air from the floor of the room, and above is a door, inside of which on a small shelf is the lamp. This lamp can be made to burn camphene, lard oil, or any cheap combustible, as the formation of the trumpet-shaped tube or chimney which encloses it, is such as to prevent carbonization. When shut, the lamp is covered above the flame with a metal trumpet-shaped funnel, opening as wide as the flue will permit at its mouth, and reduced to four inches diameter above, extending up the flue at least *one foot above* the height of the room. The radiated heat from this would suffice to give motion to the column of air within the flue, and a cap at its top would secure, with this little machine, a perfect and always reliable ventilation. Near the ceiling, into the same flue is an aperture furnished with Arnott's valve for escape of warm air from the upper portion of the room

The tube within the flue need not be removed at any season, as it would not interfere with the draught of any grate or stove that in winter might be used, but would rather increase it; the lower portion of the funnel which could be made in a length of three feet might easily be detached and connected when required. The low price at which petroleum oil can now be furnished, would enable one to adopt this plan and carry it out at an expense scarcely perceptible."

"It is very necessary to the comfort of a home that the kitchen should be thoroughly ventilated; and though my readers will see from what I have said, that this room may be more readily purified than any other, they will agree with me in condemning the want of attention that has so often permitted a nuisance, from escaped effluvia of cooking, that might so easily have been avoided.

"A ventilating flue should be provided, not only in the kitchen itself but in the vestibule, hall, or pantry, connecting it with the main body of the house, and the store-room, vegetable-room, larder, and, of course, bathing-rooms, etc., should each have an air-duct for supply and escape."

As science and experience have shown that impure and vitiated air is a most fruitful source of disease among mankind, the subject of ventilation has been considered in this connection, at considerable length, and the attention given to it, which its importance really deserves. The action of bad air may be slow, but it brings, at last, scrofula, consumption and fever; and it is often the case, as seen in coal mines, prisons, and crowded tenements without ventilation, that victims by the score are swept rapidly away by the pestilence it engenders.

The foregoing facts show that the practical question in ventilation is, at what points the air should be introduced into an apartment, and removed from it. What is required is a constant supply of fresh air at the proper temperature, and this should be secured by all means. But the point of entrance into the building must be considered with reference to local considerations. It happens, sometimes, that there are organic contaminations near the ground in the vicinity of the dwelling, or that there is a probability of annoyance from dust. If these cannot be avoided by ordinary means, the openings for the admission of fresh air should be placed near the top of the building, leading to channels constructed in the walls which open into the rooms, or furnish air for the warming apparatus. If the house is warmed by stoves or hot air, provision must be made to supply the air with moisture. A vessel of water placed on the stove or in the furnace is not sufficient for this purpose unless it presents a large evaporating surface. The expedient sometimes employed of using an endless towel suspended upon a roller, the lower portion being immersed in water, is convenient and effective It may be turned every few minutes, thus keeping a large wet surface constantly exposed to the air. Let it be remembered that if air is heated without the requisite addition of moisture it becomes injurious to health.

WARMING THE HOUSE.

The means of warming the house are among the important things to be considered in connection with a home. In building a large house to be warmed by modern appliances the method should be settled in advance. Says Mr. Wheeler in his "Rural Homes:" "Generally speaking, the house and all its parts are determined on and the building commenced, without any definite idea as to how the temperature in winter is to be moderated, the owner trusting to some one of the thousand furnaces or hot air stoves, or other health-destroying machines advertised, to supply the means required. Yet, whatever the apparatus adopted may be, if its parts were incorporated into the building from the first, and reference made to its workings in the laying of the floor, or the placing of every flue, a house more easily warmed and more economically continued might undoubtedly be obtained."

The means of warming the house are intimately connected with the subject of ventilation heretofore considered, and the authority above quoted pertinently states that in the smallest cottage, equally as in the costliest public building, an adequate and consistent ventilation should be arranged, and whether the rooms be warmed by air-tight stoves, open fire-places or the most exquisitely contrived heating apparatus, it can be secured by the very same means by which the artificial warmth is imparted. A number of expedients have been devised to draw off the foul gases in the air of dwellings, and introduce fresh oxygen instead, but the only constantly acting and sure method of supplying pure air, is by the heat that raises its temperature. The means of doing this are various, and some of them will be referred to further on.

The time has been — and not very long ago — when it was not believed to be healthful to keep the whole house warm. But that idea is happily exploded. A cold house will gather dampness, and a damp house is not fit to live in. Roofs and walls may be made tight and still the house be like a vault. Warmth and dryness should always be secured, and in providing for warming the home, these may easily be had. Many risks are run in passing from the heated air of one room to the frigid atmosphere of halls and bed-rooms, and upon retiring, depending upon the natural heat of the body, in severe weather, to keep the bed warm.

The size and style of a house, and the means of the owner, will govern largely in determining the method of heating. The modest houses of persons of limited resources are usually warmed by stoves; and to draw off the impure air in a simple cottage, an air chamber of sheet iron in the chimney-back through which the stove-pipe may pass, and provided with a register which can be regulated at pleasure in reducing or enlarging the opening, will secure this result. Another method in this connection is to surround the stove with an outer case or "jacket" with openings at the bottom which will draw off the foul air in the room. The valve at the top of the rooms, heretofore described, is essential in either of these methods.

In all methods of warming the house the principle recognized as necessary to secure ventilation is the same; to wit, motion imparted to air by rarification. With proper appliances to reach this object, impurities will be drawn off, a vacuum produced, into which pure air pours, from hot air chambers in winter, or from outside of the house in summer.

Where the means of persons will allow of it, furnaces are generally used in this country. It is claimed that they are desirable from a sanitary point of view, and that there is force in this view will not be questioned so far as it applies to keeping the walls of the house dry. On the other hand it is not to be doubted that they vitiate the air whose temperature they raise; in this regard they are more objectionable than stoves — the heated air from them being dry and disagreeable — especially where, in the use of the latter, means have been secured for adequate ventilation. An open fire is better than either, so far as this point is concerned. The advantages of a furnace may be secured and its disadvantages obviated, by having open fire-places in all the rooms, using the latter in the living room and dining room constantly during cold weather, and lighting a fire in other rooms when wanted. In such a case, the furnace fire can be kept low, the temperature of the house being kept at about sixty degrees; and this will not require much of an expenditure for fuel. With open fire-places used in connection with a furnace, rooms such as the parlor, dining rooms, etc., which are not occupied, except at stated times or upon occasion, wood is the preferable fuel, for it is cheapest even where it sells higher than coal or coke; and for this reason: a wood fire is easily made, a bright blaze is quickly produced, and the fire need only be kept burning during the occupancy of the room. A few billets of wood will suffice to make a cheerful fire for an hour, and the dry heat of the furnace is obviated by being drawn off into the fire-place, thus giving place to a more healthful atmosphere. There is, too, a cheerfulness about an open fire which other means of warming a room do not possess.

To all hot air furnaces now in use the same objection is raised, to-wit: vitiating the air, in raising its temperature. Upon this point Mr. Gervase Wheeler, in "Rural Homes," from which we have herefore obtained much information, makes some valuable suggestions. The following extracts are in point:

"This objection can only be moderated by increasing the radiating surface against which the air is brought in contact; and in selecting a hot-air furnace, the principle that should govern a choice would be this. But loss of heat is thought by furnace-makers so serious an evil that the attempt generally has been, not how large an area of moderately heated metal they can present to the passage of the air for its absorbtion of caloric, but how intensely they can heat an iron pot without cracking, against which the air may scorch and burn, and be shot into the room above, red-hot and stifling, on the principle, in fact, of 'making a little go a great way.'

"The coal-pan or pot of a furnace should be broad and shallow, not deep and narrow, experience and scientific test having shown that the heat is obtained more healthfully, more regularly, and with increased economy from the former. The radiator should be large, and the more the air is twisted and drawn within and around its coils, the more easily will its temperature be raised. The air to be warmed should be drawn from a pure and undefiled source from without the building. That, too, from an elevation, if possible, or at all events, from such a point where it is not contaminated by contiguity to cesspool or drain, for, if there be any aromatically offensive or unhealthy particles held in suspension in the air, then their existence and effects will be rendered very palpable after it has been heated.

"The waste or smoke-pipe should be made a means of ventilation by running within a shaft communicating with the rooms, and, in addition to this, the foul air from all or any of them may be gathered into one duct and burnt in the furnace itself by making the duct connect with its mouth, and no other means of feeding the fire being provided, its combustion will draw off the vitiated gases that are presented to it, in return restoring pure and freshly warmed air —like a great lung, the arteries will be fed and emptied, and the body be kept healthy, and its veins filled with life-giving fluid. These remarks will equally apply to all systems of warming."

If a furnace is employed in supplying warmth to the house, be sure that it is a good one, at least that it is not one of the various kinds that are exceedingly objectionable. Experiment has demonstrated that it is impossible to construct furnaces and stoves of cast iron and secure immunity from deleterious gases. It is held by men who have given the subject patient investigation from a scientific stand-point, that a perfect furnace cannot be made partly of cast-iron and partly of wrought iron, as it is proved that wherever the two come together oxydization goes on with great energy, and the joints are soon destroyed. Ashes deposited about the joints in winter, become moist in the summer when the furnace is not in use, and at these connections of thin iron pipes and cast-iron shoulders, the work of oxydization goes on rapidly by which the whole is destroyed. The explanation of this process is that such energetic action is produced by galvanic currents resulting from the different crystalline structure of the metals. Manufacturers and venders of the various kinds of furnaces will often descant upon the perfection of these devices; that every precaution has been taken to render the joint gas-tight, but often this is not the case. The best of them, under certain conditions, will become loose and leak, and when several joints begin to leak, there is a mixture of air and ashes which is destructive to health and comfort.

In using a furnace care should be taken to secure perfect draught. If this is lacking, imperfect combustion of fuel takes place, and carbonic acid and carbonic oxide will be present. When a stiff breeze is blowing this difficulty is partially obviated, but where there is little or no air, these dangerous agents will increase. If to this difficulty is added the nuisance of impalpable dust, the air is certainly unfit for the lungs of either children or adults. These remarks are especially applicable to most of the portable furnaces now in the market.

There are defects, in fact, in all kinds of furnaces yet invented and some of the best scientists, who have given the subject their especial attention, claim that inventors and manufacturers have not yet supplied apparatus which is not open to serious objections.

Warmth produced by steam, circulating through pipes and carried to all parts of a building, is extensively adopted in manufactories, hotels, public halls, and other places where the results justify the expense of necessary apparatus. But as this method is expensive, and rarely employed in private dwellings, it is not advisable to devote space to its description. The same remark applies to warming the house by means of hot water conveyed to various parts of the building through pipes. Indeed, there is little probability that this plan will ever be used to any considerable extent. It requires constant care to keep the fluid at a temperature just sufficient to radiate sufficient heat to properly warm the rooms; and when the water becomes too hot, steam is generated, and there is danger from explosion. Again, the water is liable to become so cooled before reaching the extremities of the pipes that its radiating power is imperceptible. There are cases in which this method may be satisfactorily used, but this pre-supposes perfection of every appliance and appointment,and constant attention.

Heating a building by means of air warmed by hot water appears to be more satisfactory than the two methods last mentioned. There are advantages in this method which are worth considering, if all that is claimed for it is true. These are, equable temperature, purity of air, small expense for fuel, freedom from trouble in attending to it, softness and elasticity in the air warmed by it, and no loss of vitality in the air.

As this last method becomes better understood, it will, no doubt, meet with much favor. It is not more expensive than some of the furnaces in use, and those whose means will permit, will do well to investigate its advantages before determining to use other means of warming their houses.

There are so many kinds and patterns of stoves for warming dwellings — for each of which special advantages are claimed — that it would be out of the question to speak even of a limited number, in detail. Parlor stoves, and stoves for rooms other than the kitchen, constitute an immense trade interest in this country, annually. The most popular are the self-feeding base-burners and gas burners; the coal is poured into a receptacle at or near the top and drops into the fire below as the fuel is consumed.

Open stoves for parlors, bed-rooms, etc., are of various patterns. They have grates, and in most of them either wood or coal may be used. There is less economy in an open fire-place than in stoves, because a strong current of air passes up the chimney carrying off much heat. The art of burning fuel to the best advantage in open grates is to maintain the whole mass in a state of incandescence by preventing all unnecessary obstruction of heat either by contact with surrounding metal or currents of cold air flowing over the fire. To insure perfect combustion, the air which comes in contact with the fuel must part with the whole of its oxygen. Air passing up through the fire which does not aid combustion, obstructs it, first by carrying off a portion of the heat, and secondly by cooling the ignited surface, so that it attracts the oxygen with less vehemence. Air entering below, a fire rapidly loses its oxygen and becomes contaminated with carbonic acid, both changes unfitting it for carrying on the process actively in the higher portions of the fire. If, therefore, the mass of burning material be too deep, the upper portions burn feebly and at least advantage; or if the pieces of coal be very large, scarcely any depth of fuel will be sufficient to decompose the whole of the air which rises through the wide spaces.

The house should be kept as near as may be at a uniform temperature. It is impossible to estimate the amount of sickness, permanent ill-health and mortality among mankind, especially children, by overheating rooms, and then letting in of cold or damp air; but it is very great. This fruitful source of disease and discomfort should be carefully guarded against. First, comes the question of a constant supply of pure air, which has been sufficiently explained in preceeding pages, and the means indicated to secure it; and secondly the temperature should be kept at an even point, and not above 60 degrees It is not possible for persons to regulate the temperature of a room by their own feelings, for these vary with varying health, or with the exercise which is being taken. But it can be done by keeping thermometers in the rooms and regulating the degree of warmth by them. A seven inch thermometer, Fahrenheit scale, can be had for fifty cents; one of eight at seventy-five cents; ten inch, $1.00 twelve inch, $1.25. These thermometers serve very well for such uses as observing the temperature of a room or bath.

FUEL FOR DOMESTIC PURPOSES.

Every housekeeper should have a knowledge of the comparative value of different kinds of fuel. The heating power of various kinds of coal, and of coke is not generally understood, because comparatively few people give the subject little thought. No inconsiderable sum, during a year's time, which might have been saved, or in other words, the difference in cost, where comparative value of various kinds of fuel is understood, is of no mean importance, in cases where the income is limited. The ashes, or residuum of fuel, left after combustion, provided weight and other circumstances be equal, determines the quantity of combustible matter it contains. One kind of coal, contains a greater portion of combustible matter than another, and the heating power and consequent value of different kinds of fuel depend largely upon this circumstance, though not entirely. Coal that leaves behind the smallest amount of earthy and incombustible substance is the best.

Certain kinds of coal have an especial fitness or use for a particular purpose. Where heat is required to be applied to an extensive surface, coal is required that abounds in volatile matter and supports a powerful blaze, while more solid fuels are employed where an equable and lasting heat with but little blaze are desired. The same thing applies to wood. Dry pine wood produces a powerful blaze, while its charcoal yields comparatively little. The bituminous coals abound in volatile matter, while the Lehigh and similar coals contain none and give off little flame.

Considerations other than the chemical composition of fuels affect their value. For practical purposes a mere change in mechanical structure may give an entirely different character to them while their real calorific power is not altered. Coals reduced to dust are thus rendered nearly worthless; in their solid form their value is great. Good hard dry wood in solid sticks possesses a value which is vastly reduced when its form is changed to shavings or saw-dust. Other circumstances are to be taken into account also when considering the economic aspects of fuel. For instance the arrangements or appliances for utilizing all the heat produced, so that the least amount may be wasted, and to insure the most perfect combustion of the fuel. In an article on fuel in the American Cyclopedia it is stated that the loss of heat from imperfect arrangements in these respects alone has been estimated at full one half of that generated. By the use of simple appliances, the proper construction of chimneys and the employment of approved devices much of this waste may be obviated. These are referred to elsewhere in this work.

When wood is used for fuel it should be thoroughly dry, as when in a green state it contains 25 per cent of water, and the heat to evaporate this water is lost.

There is very poor economy and bad management on the part of a great many people, especially in rural districts in the preparation and management of firewood. The housewife and her "help" often have their patience tried by the fuel which has been provided. It is no less true than strange that many families do not know the convenience and economy which a wood-house or a wood-shed ensures. In the winter the wood-pile is covered with snow; in summer it is saturated by succeeding rains. How much of vexation, discomfort loss of time, and money would be obviated by a little forethought and timely labor.

One cord of good wood cut and split fine and corded up beneath a shelter while the timber is yet green, after it has become seasoned will furnish more heat than two cords of the same kind of fuel which is allowed to remain in the open air exposed to alternate storms and sunshine. It is estimated that if a family without a wood-house has been accustomed to consume twenty cords of wood annually, worth say, $5.00 per cord, by properly preparing ten cords in a wood-house, six months before the fuel is to be burned, it can save wood equivalent to $50 ready money. Added to this is the convenience of a quick, lasting and hot fire, when compared with the perplexities incident to the annoyances of a poor fire of green, unseasoned wood with which to carry on the ordinary work in the kitchen.

In the country, among those engaged in rural pursuits, there are wet days when operations in the field are suspended in which firewood may be prepared ready for the stove, and corded in an airy wood-house or some kind of shed, so that it is easy of access.

The main consideration in providing a wood-house is simply a roof to carry off the rain and protect the wood from a covering of snow. A tight wood-house is not a good place for firewood, unless the wood has been well-seasoned before being carried in. Wood should be cut short and split fine while it is green, then corded up where the air can circulate freely about it, and before the sticks have lain long enough to become water-soaked. This course will secure satisfaction and economy.

In buying wood and coal, it is not always that good measure or full weight is given the purchaser. To guard against imposition the following rules are useful:

A cord of wood is 128 cubic feet, the sticks are cut 4 feet long and piled 4 feet long and 4 feet high; 8 feet in length making a cord.

Soft or bituminous coals are usually purchased at the rate of 28 bushels of 5 pecks each to a ton of 43.57 cubic feet. Anthracite, 20 bushels to the ton.

An English work,* under the caption of "Household Chemistry," has an article on coal and coke, which is here adopted, as it contains information upon this subject that will be found useful:

"When good coal is burnt in a grate of proper construction, it gives out a large amount of heat during its combustion; under favourable circumstances the temperature thus produced being above 2000 degrees centigrade. Good coal as it burns gives out a large quantity of inflammable gas, which readily burning keeps up the heat and produces that pleasant blaze so characteristic of a coal fire. For this reason it is advisable not to stir the fire too often, since it tends not only to waste the fuel, but also, by cooling the fire, to diminish the amount of gas given off.

"All coal contains a certain amount of water, although the coal may appear to be perfectly dry. In some cases it contains as much as twenty parts of water in each hundred parts of coals. For this reason, in estimating the value of different kinds of coal for heating purposes, the amount of water they may contain should be carefully ascertained, as it is a great loss to the consumer to pay the price of coal for the water it may contain. The amount of water present in a sample of coal may be easily learnt by weighing out a small quantity — say a hundred grains — and placing it over the mantelshelf for a few days, during which time it parts with its moisture. If the coal is again weighed, the loss of weight will show the quantity of water it orginally contained. For this reason it is advisable always to purchase coal in hot dry weather.

"The presence of water in coals tends very materially to impair its combustion, owing to the large amount of heat required by water before it can assume the state of vapour

* Cassells' Guide.

"After coal is burnt it leaves behind it some ash. The quantity and kind of ash thus left deserves the attentive consideration of every person who burns coal, since he has to pay for these incombustible matters the price of coal.

"The principal inorganic matters found in coal, and which are left behind as ashes, are iron, alumina, silicia, and lime. When coal containing a large quantity of iron is burnt, the ashes left have often a red color; this is due to the iron being converted into a red sesquioxide (rust of iron) by the absorption of oxygen during combustion of the coal. The use of such coal will be found to very quickly destroy the bars and iron-work of the grate in which it is burnt. This is owing to the ashes of coal that contain much iron being more fusible than ordinary ashes in which it is absent, and by this means preventing a free current of air through the grate. Coal of this kind, also, from the same cause, gives more trouble in cleaning out the grate, owing to the greater difficulty of removing the ashes.

"The earthy substance called shale, which is so often found in inferior coal consists of silicic acid in combination with alumnia. Coal always contains sulphur, usually in the form of iron pyrites (sulphuret of iron), and it is to the presence of this substance that the bisulphide of carbon, and sulphuretted hydrogen gas found in badly prepared coal gas is to be attributed. Sometimes large quantities of this iron pyrites are found in coal, and the spontaneous combustion to which such coal is liable is due to the readiness with which the pyrites absorbs oxygen, producing the sulphate of iron. Coal of this description often falls in pieces from the same cause. When coal which contains much iron is exposed to the atmosphere and damp, spots often form on its surface owing to the production of the sulphate of iron.

"The chemical composition of coal is carbon, hydrogen, oxygen, nitrogen, and sulphur, in addition to the other substances left behind in the ash. It is due to the presence of the nitrogen that ammonia is produced when coals are exposed to heat out of contact of the atmosphere, while wood, which contains the same elements, with the exception of the sulphur and nitrogen, yields acetic acid under the same circumstances. The amount of nitrogen present in coal is from one to ten per cent.

"One great advantage possessed by good coal is that from its small bulk it lies together more compactly in the grate than either wood or peat; and owing to this cause a regular current of air passes more easily through the burning mass, and thus assists in keeping up the combustion. Coal fires also require less attention than those of wood to keep them burning. The degree of heat produced by the combustion of coal is 300 degrees centigrade higher than that given out by wood under the same circumstances.

"When coal is exposed to heat in a closed vessel, out of contact of the air, it leaves behind it a solid substance called coke, while water, ammonia, tar, and coal gas are also produced by the action of the heat out of the constituents of the coal. This is especially the case with the class of coal known as "bituminous," from its burning with a smoky flame. Coke prepared in this way contains much of the sulphur originally present in the coal. The presence of sulphur in coke is indicated by a peculiar appearance on its surface.

"Good coke is a more or less porous substance, with a silky or metallic lustre, and iron grey appearance. It does not blacken what it touches in the manner of ordinary coal. The appearance of coke, however, varies slightly, according to the kind of coal from which it was produced, the kind prepared from bituminous coal having a greater lustre, and presenting the appearance of having been partially melted. If the coke is prepared from coal which contains much sulphuret of iron, it is found to exert a very prejudicial action on the iron bars and sides of the grate. If, however, the sulphur was contained in the coal, in union with lime, then it does not have such an injurious effect upon iron.

"Coke, like coal, when it contains much of the sulphuret of iron is liable to ignite spontaneously when exposed to wet, if stored in large quantities. Coke is most useful when we require a powerful heat in small space, and where much flame is not desired. Before it can burn with advantage, it requires a powerful draught, and that the coke should be at the temperature of a bright red heat. Burnt under these conditions, it is superior to charcoal, which does not yield so high a degree of heat. A coke fire forms a more compact mass of burning material than one composed of charcoal, and therefore becomes of a higher temperature.

"If we analyse the composition of a number of samples of coke, and take the average, we shall find that coke consists of eighty-five to ninety-two per cent. of carbon, five to ten per cent. of moisture, and five to ten per cent. of ash. Sometimes coke contains a larger proportion of moisture, some specimens yielding as much as twenty per cent. The quantity of ash varies greatly in different samples some kinds yielding as much as thirty parts in the hundred, in others scarcely more than four per cent. When the amount equals twelve per cent., that coke is to be considered of inferior quality."

It is advisable to lay in the winter's supply of coal in the summer, not only because it is more free from water at that time, but from another important consideration, to wit: it is usually very much cheaper. In some cases the difference in price of hard coal in summer and winter is five dollars to the ton. In Chicago, anthracite coal can be bought in mid-summer at from eight to nine dollars per ton; the same coal in mid-winter often sells at thirteen and fourteen dollars per ton. This difference in price is no inconsiderable item in the course of the winter, especially in cold climates where long winters are the rule; and hence differences in cost of procuring the winter's supply of coal are too important to be overlooked.

As a further safeguard against imposition and fraud, it is desirable in the first place to know the capacity of the bin or receptacle for the coal. This can be ascertained by measurement and calculations based upon rules and tables to be found in THE HOME GUIDE. In the next place provide a box which will contain a bushel, or half a bushel; and where coal is purchased in small quantities it will require but little time to measure it.

TABLE, *showing the Heating Power of different Combustibles*

Designation	Lbs. of water heated 1° by one lb. of substance.	Designation	Lbs. of water heated 1° by one lb. of substance.
Oak seasoned	4,600	Coal, Anthracite	9,560
" kiln-dried	5,960	" Cannel	9,000
Pine, seasoned	5,466	Coke	9,110
Coal, Newcastle	9,230	Peat	3,250
" Welsh	11,840		

TABLE, *showing the Relative Value of the following Fuels by weight.*

Designation.	Value.	Designation.	Value.
Seasoned oak	125	Charcoal	285
Oak, kiln-dried	140	Peat	115
Hickory	137	Welsh coal	312
White pine	137	Newcastle "	309
Yellow pine	145	Anthracite "	250
Good Coke	285		

TABLE, *showing the weights per cubic foot of the different kinds of Coal.*

Designation.	Weight in lbs.	Designation.	Weight in lbs.
Anthracite	50 to 55	Western, (bitum.)	47
Bituminous	45 to 55	English, "	50
Cumberland	53	Charcoal, (hard wood)	18½
Virginia, (bitum.)	49	" (soft or pine wood)	18

Where coal and coke are used in a grate, there is economy in having it broken up very small, and by this means a fire is soon produced. A saving in coal may be effected by having a portion of the ashes kept, mixing small coal or coal-dust with them, and putting a small quantity of water with this mixture. Put some of this mixture at the back of the grate, fill up the front with coal and it will all burn together brightly and clear and save much trouble in sifting the cinders.

The comparative value of fire-woods in a *seasoned state*, or when reduced to charcoal, may be learned from the following table abridged from Browne's *Sylva Americana :*

TABLE *showing the Comparative Value of Fire Woods.*

WOODS.	Specific Gravity of dry Woods.	Pounds dry Wood in one Cord.	Specific Gravity of dry Coals.	Pounds Charcoal in one bushel.	Pounds Charcoal from one cord of dry Wood.	Bushels Charcoal from one cord of dry Wood	**Value as Compared with shellbark Hicory.**
Shellbark Hickory,	1.000	4469	.625	32.89	1172	36	**100**
Common Walnut,	.949	4241	.637	33.52	1070	32	**95**
White Oak,	.855	3821	.401	21.10	826	39	**81**
Thick Shellbark Hickory,	.829	3705	.509	26.78	848	32	**81**
White Ash,	.722	3450	.547	28.78	888	31	**77**
Scrub Oak,	.747	3339	.392	20 63	774	38	**73**
Witch Hazel,	.784	3505	.368	19.36	750	39	**72**
Apple Tree,	.697	3115	.445	23.41	779	33	**70**
Red Oak,	.728	3255	.400	21.05	630	30	**69**
Black Gum,	.703	3142	.400	21.05	696	33	**67**
Black Walnut,	.681	3044	.418	22.00	687	31	**65**
White Beech,	.724	3236	.518	27.26	635	23	**65**
Black Birch,	.697	3115	.428	22.52	604	27	**63**
Yellow Oak,	.653	2919	.295	15.52	631	41	**60**
Sugar Maple	.644	2878	.431	22.68	617	27	**60**
Sassafras,	.618	2762	.427	22.47	624	28	**59**
White Elm,	.580	2592	.357	18.79	644	34	**58**
Holly,	.602	2691	.374	19.68	613	31	**57**
Wild Cherry,	.597	2668	.411	21.63	579	27	**55**
Yellow Pine,	.551	2463	.333	17.52	585	33	**54**
Sycamore, or Buttonwood,	.535	2391	.374	19.68	564	29	**52**
Chestnut,	.522	2333	.379	19.94	590	30	**52**
Spanish Oak,	.548	2449	.362	19.05	562	30	**52**
Poplar,	.563	2516	.383	20.15	549	27	**52**
Butternut,	.567	2534	.237	12.47	527	42	**51**
White Birch,	.530	2369	.364	19.15	450	24	**48**
Jersey Pine,	.478	2137	.385	20.26	532	26	**48**
Pitch Pine,	.426	1904	.298	15.68	510	33	**43**
White Pine,	.418	1868	.293	15.42	455	30	**42**
Lombardy Poplar.	.397	1774	.245	12.89	444	34	**40**

THE WATER SUPPLY.

Water is among the greatest blessings which a beneficent Creator has given to man. It enters into the composition of every article of food; it is the chief ingredient in all that we drink; and it is a component of the air we breathe. It hardly need be said that human existence is impossible without it.

The chemists tell us that if the body of an adult person, weighing 154 pounds was subjected to chemical analysis the oxygen and hydrogen, (which are for the most part combined in the form of water,) would be found to comprise about 110 pounds, leaving but 44 pounds of all other elements. Dr. James R. Nichols states in an essay upon the chemistry of the human body, that it "holds sufficient water at all times (about 14 gallons) to drown the individual, if it were contained in a suitable vessel. Under ordinary circumstances the system parts with six pints of this water each day. If we drink largely, of course an increased quantity is eliminated through the excretory organs. This liquid finds its way into the system through the food and drink. Considerably more than half the bulk of all the bread, meat, and vegetables used as food is water. There is no other substance but water which remains unchanged after entering the body. Under the terribly destructive influence of vital chemical action, all other agents and bodies are torn asunder, and from their elements are formed new compounds of most strange and complex natures; water flows through our life, as it flows from mountain cataracts and meadow springs, unchanged and unchangeable, save in its physical aspects and condition. It is made capable of holding in solution all the nutrient and effete principles which enter or which are rejected from the human organization, and it is the medium through which it is built up and torn down. Life and death are alike dependent upon its agency."

One of the first things to be considered in making or securing a home is the water supply, and, wherever practicable, water should be brought into the house. The advantages gained by this course are so many and so great that where circumstances will admit of it, the means of securing this object are included in all good plans. In the country, or in towns where municipal regulations do not supply water, a spring or running stream may be utilized for this purpose, and by the use of a hydraulic ram, water may be forced into pipes leading to the various rooms of the house. Sometimes a spring may be found at an elevation which will permit the water to flow through pipes into the house, without any artificial help. If, however, these conditions are wanting, and a well is the means of a supply of water, pipes are still available, for water may be pumped into the house occasionally, which will be a great advantage. With this arrangement much of the inconvenience and labor of carrying by hand all the water required for daily use, into the house, is relieved. Thus is secured ease in conveying water to the kitchen, the bathroom, and to the stationary washtubs, which cannot fail to be at once appreciated.

It is seldom possible to secure water combining all the qualities which it should possess. These comprise softness, freedom from animal and vegetable matter, aeration by a pure atmosphere, freedom from earthy or mineral matter, medium temperature, limpidity or clearness, absence of special flavor or taste. Pure water has neither taste nor smell, is colorless in small quantities, but when viewed in a mass is of a more or less blue tint; poured into a glass it should be bright and clear, and crystal, and sparkle with the glass it contains. An eminent authority recommends filtered rain-water for cooking and household purposes, the impurities of this water being removable by filtration, while the animal and vegetable matter it still contains, in spite of this filtration, can be rendered harmless by boiling. But it is a mistake to suppose that water, supplied either by companies, or the ordinary methods, can be rendered good and pure by being filtered. Water, says Dr. Bernay, never occurs in nature in a state of purity, and it is equally a mistake to suppose, because water from a well appears pure and is not conveyed through pipes, that it is necessarily fit to drink. Generally speaking, so far as the quality of water is concerned, mankind takes it as supplied or as they find it, and use the best means possible for its purification for drinking purposes, where purification is necessary. It is always desirable that the supply of water should be constant, as, when standing, it contracts impurities. It is readily contaminated by any effluvia from surrounding objects, and absorbs impurities in the atmosphere. Water which has stood all night in a bed room should not be drank, as it absorbs impurities evolved from the lungs during the process of respiration.

With the exception of lead, all impurities in water may be guarded against by boiling it, allowing it to rest, and then carefully drawing it off from the sediment, allowing it to remain for a time, and then aerating it by pouring it several times from one vessel to another. The presence of lead in water is detected by a sweet, mawkish taste. The following paragraph from an English work, is applicable in this connection:

"It is of the most vital importance to health to ascertain the quality of the well-water, if the house depends upon that for its supply. Be certain that it does not contain salts of lime in excess, which renders the water hard and unwholesome, nor soluble animal matter, either of which may be largely present, and yet the water be excessively brilliant. If the water but slightly curdles soap, it is good, but if the latter separates into flakes the water is injurious to health if drank without first precipitating — in the form of rock or fur in kettles — the lime salts which it contains, and which, when drank, are by the heat of the stomach deposited instead of being taken into the system. Soft water is a solvent of food; hard water, on the contrary, in which there is an excessive proportion of salts of lime, occasions indigestion, though that is a minor evil, when compared with the mischief it brings about in other ways."

Rain water is, next to distilled water, the best for cooking or drinking, because it very readily dissolves food in the stomach. If it be filtered, it is as bright as any other water. While water that is *absolutely pure* is not required to maintain health, it is essential that it should contain no putrefactive matter. The presence of certain animalculæ in water does not injure the system, except when they are dead and putrid. This is a providential circumstance, for vast numbers of people are compelled to drink water in which animalculæ abounds, or drink none at all.

"For drinking purposes,* no water can have too much gases unless of sulphuretted hydrogen, the offensive odor of which sufficiently excludes it from common use; but when the saline constituents exceed about fifty grains to the gallon, the water acquires a more decidedly strong or mineral taste, and it may then be regarded as abnormal and proportionally unfit for drinking. Even with a less quantity, this is true when the salts are mainly the carbonate and sulphate of lime, these substances acting to derange the digestive, absorbent, and secretory organs, and tending to the production of various forms of disease, among which dyspepsia, constipation, gravel, and stone are prominent. Such effects are experienced more especially by persons previously unaccustomed to the use of such waters; as in the case of those removing from the granite soils of New England to the limestone regions of many of the Western states. It is the salts of lime and magnesia, particularly (both as most common and as most effective) the former, that give to certain waters, and more commonly those of wells, springs, and rivers in limestone districts, the quality known as 'hardness.' The lime and magnesia of such water, upon the introduction of any ordinary soap, decompose the latter, taking by substitution the place of the soda or potash which was its base, and thus forming in fact with the fatty acids a lime or magnesia soap, which being insoluble is precipitated, and appears in the water as a white curdy matter. Thus the cleansing property of ordinary suds is not obtained; the precipitated lime soap is greasy and tenacious, and it not only fails to cleanse, but entering the interstices of cloths, or in bathing obstinately closing the pores of the surface, it communicates also a hard and rough feeling. Hence it is that 'hard' waters are rightly considered unfit for use in washing, as they really are for bathing or drinking, unless means be taken to render them soft; and hence also, it is that the attempt to make any water wash with soap, or the use of the soap test, readily determines in this respect the quality of water, and its fitness for any of the purposes named. This soap test consists in observing the quantity of a prepared solution of soap, which must be added to a given measure of water, in order to produce a permanent lather. The holding in solution in considerable quantity of carbonate of lime, the most usual constituent of a hard water, requires the presence in the water of some excess of free carbonic acid, without which this salt is but sparingly soluble; hence, by boiling for some time, the carbonic acid being mainly expelled, the lime is deposited, forming the scale or incrustation upon the inside of kettles and of steam boilers in which such waters are repeatedly boiled."

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* **American Cyclopedia.**

In very many cases, numerous organic impurities are imparted to water by its percolations through cultivated lands and crowded communities where there are deposits of sewage matter. The presence of these impurities are detected with difficulty except by an experienced chemist, unless putrefaction of the water readily commences if the cistern or reservoir be covered. The explanation of putrefaction in water in which such impurities exist is found in the fact that such matters in a state of decay possess very little oxygen or none at all; they form themselves into new life; but if air is admitted freely the process of change ceases and the deleterious matter passes off in gases. All organic impurities arising from all growth and decay of animal life, can be removed or rendered harmless by the filtration of water, through animal charcoal. Wood charcoal is also used for this purpose, though upon the subject of its virtue, authorities differ Dr. Bernays asserts that wood charcoal removes both smell and taste from foul water, and it is well adapted, therefore, to serve as a filter. It is a well ascertained fact that water which has become putrid from heat or a thunderstorm, may be rendered sweet by boiling it ten minutes with a lump of charcool. All authorities, however, agree that animal charcoal is a great purifier of foul water; but it loses its power after a while and must be renewed.

Professor Frankland, in one of his lectures at the Royal Institution of London, stated that lead, poisonous as it was, did not contaminate hard water, and that soft water circulating through leaden pipes is soon entirely protected by the formation of an insoluble coating on the interior of the pipes; that tinning the interior of pipes is dangerous inasmuch as abrasion would lead to the formation of a voltaic circuit and a more rapid solution of the lead. Dr. Bernays affirms that spring water may be kept with safety in leaden cisterns, provided the covers be of wood, unleaded; otherwise the pure water which rises in vapor, and settles in drops on the lid, would if it were of lead, slowly dissolve the metal in small quantities, which would then drop into the water.

From these facts it appears that water is best contained in uncovered cisterns, because the air prevents or annihilates putrefaction; that cisterns or reservoirs should not contain much more water than is needed for daily consumption, else it becomes stagnant from want of oxygen, and its organic matter putrifies; that putrid water can be rendered sweet and wholesome, by filtering it through animal charcoal, made by strongly heating bones in vessels from which air is excluded, though it is held that simple wood charcoal will purify water equally as well.

Water should not be permitted to stagnate; the air should be admitted to it freely, by leaving exposed cisterns and reservoirs uncovered; and these should be located and constructed where this object can be reached. Hard water, rendered so from excess of carbonate of lime can be rendered soft by boiling sufficiently; also by sulphate of lime (gypsum); by carbonate of soda; by potash added twenty-four hours before the water is needed; or by exposing it in shallow tanks two or three days to the air. The remedy being so simple persons living where the mountains, lime-stone or chalk abounds, need not use hard water, nor need they drink it where gypsum is found.

It is not intended here to treat specifically of the hygenic properties of water, especially of those for whose mineral properties great value is claimed. But in this connection, it is not amiss to say that very much of the benefit derived from many of them might, in numerous instances, be derived from drinking more freely of good water in which these mineral properties are wanting. And here the remarks of Dr. Nichols, (from whom we have before had occasion to quote,) upon this topic, are especially apposite:

"It is a singular fact that there are numerous waters in this country and in Europe, medically in high repute, which are distinguished among chemists only for their *purity*. The celebrated waters of Pfeffers, to which Martin Luther resorted and was cured of terrible hypochondriasis, are almost chemically pure, and so are those of Wildbad and Baden, to which thousands flock from all parts of the world. These fountains, as resorts for invalids, date back to the time of the Roman Conquest, when Cæsar bathed in and drank the waters, extolling their virtues. Several of the springs at Ballston and Saratoga contain so few saline particles that they should be reckoned as nothing in judging of the source of the therapeutic influence of the waters.

"At this point the inquiry arises, From whence comes the remedial power of these fountains? By their use, are diseases ameliorated or cured? or are alleged beneficial effects purely imaginary, and without foundation in fact? The latter hypothesis is unsatisfactory, and there is a vast amount of unimpeachable testimony in the way of its ready reception. Indeed, it is not necessary to resort to this method of disposing of the difficulty. In the examination, we find little more than pure water to be the agent employed; and, if remedial benefits result, the pure lymph of the fountain, innocent of salt, should have all the credit. And is not water a medicine? When drank in quantities beyond the demands of thirst, in many diseases, especially those arising from arrested metamorphosis, it produces marked salutary results. I venture the opinion, derived from experiance and observation, that simple water, as a therapeutic agent, is not sufficiently well understood among educated medical men. Its employment has been long abused by empirics, and therefore has fallen into discredit. In withdrawing attention from it, an important auxiliary in the treatment of disease is overlooked.

"The consideration of its internal use, in connection with the so-called mineral springs, leads to some observations upon that form of employment. It cannot be doubted that morbid accumulations of effete matter in the tissues and alimentary canal are more readily removed by draughts of water, at proper times and in proper quantities, than by any other agent; and here we learn the secret regarding the benefits obtained by invalids at mineral springs. A large majority of those who resort to them are suffering from atonic conditions of the stomach and bowels. Constipation is almost certain to be a prominent trouble, and then follow nervousness, hypochondriasis, and a long train of evils. At home no more than a tumbler of water may be drank in the twenty-four hours; at the springs, three or four are swallowed before breakfast in the morning. The fæcal accumulations of the intestines are softened, peristaltic motions awakened, the food ducts are cleansed, and smiling health returns. The 'minerals' and the salts of course get the credit,— *aqua pura* none at all. If the saline or solid constituents of a pint of almost any of the aperient spring-waters are isolated, and taken in a dry state, they seldom produce any action of the bowels; but if they are redissolved and drank, laxative effects follow. This would seem to prove that a combination of water and salts is needful; but when it is found by further experiment that the water produces intestinal motion without the salts, a new view presents itself.

"It is quite evident that the benefits received by invalids at mineral springs cannot be attributed solely to any unusual condition of the waters, but in a great degree to the liquid itself, taken medicinally, or at unusual hours and in unusual quantities. It must, however, be conceded that a change of air, habits, society, etc., has much to do in the work of restoration; and therefore, although the water employed for domestic purposes at home may be equally efficacious, a resort to springs should not be discouraged, especially among those whose pecuniary means are ample. The proofs which science affords that the physical and chemical character of waters famous for their medicinal virtues differs in no essential particular from those in ordinary use in families, certainly favors the view that, having regard to temperature, quantity, and time of employment, the home waters may be used medicinally for the relief of a large class of affections."

To recapitulate the properties which wholesome drinking water should possess, it should contain a certain quantity of air in solution. Ice and snow-water have none, and are therefore unfit both for drinking and as a medium for fish to live in. The air, however, may be restored by agitation. Thus, trout are found in streams that spring from glaciers, at no great distance from their source, because the water has been aerated by falling and being broken while leaping from rock to rock. It is curious that the air contained in water should hold more oxygen than atmospheric air; it explains why so small a quantity should serve for the respiration of fishes. Water, indeed, appears to have the power of changing the composition of the atmosphere. The air which enters into water at its conversion into ice, and which is separated from it by distillation, contains even a greater proportion of oxygen.

Easy tests of good drinking water are, that it readily dissolves soap without curdling, and that it cooks vegetables well, especially dry vegetables, as peas. Drinking water should be limpid, scentless, insipid (not flat or vapid), giving no sensation of weight when taken on the stomach, yielding but a slight precipitate to the nitrate of silver, the nitrate of barytes, and the oxalate of ammonia. Its temperature should not greatly differ from that of the atmosphere. The best is water which flows over a flinty or a granite bed, and whose source is not in calcareous ground.

CISTERNS.

The water supply, in many cases, largely depends upon cisterns or reservoirs. There are many districts of country where springs and wells cannot be depended on for an adequate amount of water for domestic purposes, while seasons occasionly occur which are so dry that even in localities considered well-watered, persons are put to serious inconvenience from lack of water. Hence cisterns are made to take the place of wells and springs where the latter cannot be depended on.

Brick is largely used in constructing cisterns, but a cheaper method and quite as efficient is to sink a hole in the ground and plaster with hydraulic cement directly upon the walls. Plank is sometimes used also, the whole cistern being constructed of this material; but this method is objectionable.

Water falling upon the roofs of the buildings and conducted by troughs and spouts to the cistern, is necessarily impure. Dust, soot and other impurities in the air are washed down in the first fall of the rain, and the same substances which have collected upon the roofs and conductors are carried with the water into the cistern. These may be removed by filtration. No one need be in want of wholesome water if well-known means be employed to secure it.

If the cistern is to be the main supply for water, to be used for domestic purpose, a roof of slate is preferable to any other; and if the means of the builder will admit of it we would advise the use of that material. Next to slate the use of shingles is recommended if the cistern is to be the chief dependence for water; the use of composition roofing material, into which pitch and coal tar largely enter, should be discarded. A disagreeable taste is imparted to the water which it is very difficult, indeed, next to impossible, to remove.

Plastering with hydraulic cement upon the sides and bottom of a pit dug in the ground is the mode generally adopted in this country in constructing cisterns, because it is the cheapest and most convenient mode of construction, and when good material and proper skill are employed these cisterns are scarcely inferior to brick. The two essential requisites for underground cisterns are, good hydraulic lime and a supply of clear pure sand. In selecting these, experience or trial of such as have proved efficient, should be the test, where practicable. At all events do not permit the use of bad and unsuitable material for it will prove a source of continued trouble and vexation. Good hydraulic cement used with clear sand will soon become hard as sandstone.

In the "Annual Register of Rural Affairs," a few years ago, there was a useful article on this subject, from which the subjoined extracts are taken:

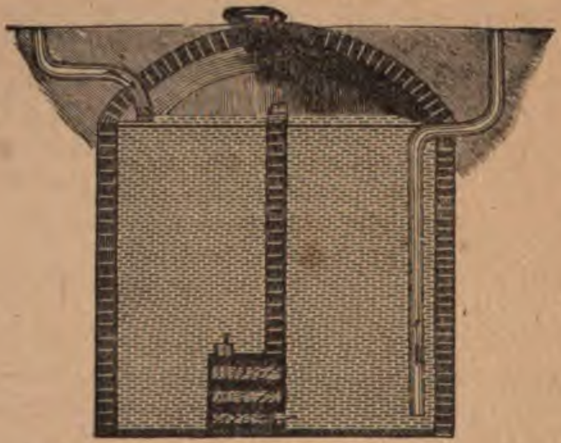
"When the process of hardening (of cement and sand) does not take place it must be attributed to bad materials, or to intermixing in wrong proportions. On the latter point, some are misled by adopting the practice employed in mixing common lime mortar, the hardest material resulting in this case where the sand constitutes about five sixths of the whole. But the hardest water-lime mortar can not be made if the sand forms much more than two thirds of the whole.

"A very common and cheap form for the cistern is, to dig a round hole into the ground with sloping sides, somewhat in the form of a narrow-bottomed tub, and then to plaster immediately upon the earth. Unless a slope is given to the sides, the mortar can not be made to keep its place while soft, as it is nearly impossible to find a soil dry and hard enough to retain the plastering by simple adhesion. The top of this kind of cistern must therefore be wide, and consequently difficult to cover very large ones effectually and substantially. The covering is usually made of stiff and durable plank, supported, if necessary, by strong scantling, and over this is placed about one foot of earth to exclude completely the frost. A hole with a curb about eighteen inches by two feet, must be left in this covering, for the admission of the water pipe or pump, and to allow a man to enter for cleaning out the cistern when necessary. In cold or freezing weather, it is indispensably requisite to have this hole stopped to exclude frost, which would otherwise enter the wet cement or walls, and produce cracking or leakage—a frequent cause of the failure of water-lime cisterns.

"This is the cheapest form of such reservoirs, but a better, more capacious, and more durable mode, is to dig the hole with perpendicular sides in the form of a barrel, and build the walls with stone or brick, to receive the plastering. In consequence of its circular form operating like an arch, these walls will not be in danger of falling if not more than half the ordinary thickness of similar walls. For large cisterns they should be thicker than for small ones. The walls should be built perpendicular until about half way up, when each successive layer should be contracted so as to bring them nearer together in the form of an arch, reducing the size of the opening at the top, and rendering a smaller covering necessary. If the subsoil is always dry or never soaked or flooded with water, the walls may be laid in common lime mortar, and afterward plastered on the inner surface with the cement. But in wet subsoils, the whole wall should be laid in water lime. If the bottom is hard earth or compact gravel, a coating of an inch or two may be spread immediately upon the earth bottom; but in other instances, the bottom should be first laid with flat stone, or paved with round ones, the cement spread upon these.

"The plastering upon the sloping earth-walls, as first described, should never be less than an inch thick, and if the earth is soft it should be more. On the stone or hard brick walls half an inch will be thick enough. Cisterns can rarely, if ever, be made free from leaking, without giving them at least two successive coats—and three will be safer; the previous coat in each instance being allowed to become dry and hard."

The cistern can be divided into two compartments by a wall of brick or stone, water-tight, to within six inches of the bottom. In this space place a box with alternate layers of gravel, sand, and pounded charcoal. One compartment receives the water and the other contains it filtered and ready for use



The above engraving shows a sectional view of a cistern con structed after this method, and from it, the description given is easily understood.

Another method of filtration is to divide the cistern with a double open wall from top to bottom, of stone or brick with an interspace of six inches between the walls with pounded charcoal. One compartment receives the water which passes through the filter and is fit for use.

In passing through such filter however, the rain water loses much of its oxygen. It is advisable therefore to leave the cistern uncovered a portion of the time.

Another plan is as follows: A cask holding perhaps a hundred gallons is placed by the side of the larger cistern, and quite near the surface of the ground. An aperture in its bottom, over which is secured a large sponge, is connected by a good-sized pipe ot wood or clay with the main tank. A third part of the cask is now filled with the charcoal and gravel; the conductor from the house is led into it, and the thing is complete.

This mode is not only as easy and cheap as the other, but has this great advantage, that the filterer can be often and readily cleaned, while in the other case, it is necessary to remove all the water and to go down deep in order to accomplish the work.

The following rules and examples to find the capacity of cisterns of various sizes are from the "Farmers' and Mechanics' Manual", as revised and enlarged by George E. Waring Jr:

To find the number of gallons in square or oblong square cisterns.

RULE.—Multiply the length in inches by the width in inches, and that by the depth in inches, and divide the product by 231. The quotient will be the number of gallons.

EXAMPLE.—Given, a cistern 6 feet long by 3 feet wide and 4 feet deep; how many gallons will it contain?

SOLUTION.— 72 inches length, × 36 inches, width, × 48 inches, depth =124416÷231=538.59 galls. *Ans.*

To find the number of gallons in triangular cisterns.

RULE.—Multiply the base in inches, by the perpendicular height in inches, and half that sum by the depth in inches, and divide the product by 231. The quotient will be the number of gallons.

EXAMPLE.—Given, a triangular cistern 8 feet at the base or longest side, 7 feet in perpendicular height, 4 feet deep. How many gallons will it contain?

SOLUTION.—96 inches, base, × 84, perpendicnlar height in inches, ÷2=4032 × 48, depth in inches,=112896÷231=488.72 galls. *Ans*

To find the number of gallons in circular cisterns.

RULE.—Find the area of the circle in square inches, by the rule under the caption of "Circles." Then multiply the area by the depth in inches, and divide the product by 231. The quotient will be the number of gallons.

EXAMPLE.—Given, a cistern 8 feet in diameter by 5 feet deep. How many gallons will it contain?

SOLUTION.—Area, the diameter being 96 inches	7238.2
Multiplied by 60 in,, the depth, gives,	43429.20
Divided by 231, cubic in. in a gall., "	1880. gall *Ans.*

TABLE, *showing the contents of circular cisterns from 1 foot to 25 feet in diameter, for each 10 inches in depth.*

Diameter.	Gallons.	Diameter.	Gallons.	Diameter	Gallons.
1	4.896	5½	148.546	10	489.600
1½	11.015	6	176.253	11	592.400
2	19.583	6½	206.85	12	705.
2½	30.545	7	239.906	13	827.450
3	44.064	7½	271.072	14	959.613
3½	59.980	8	313.340	15	1101.610
4	78.333	8½	353.735	20	1958.421
4½	99.116	9	396.573	25	3059.934
5	122.400	9½	441.861		

To find the number of gallons in tub-shaped cisterns.

RULE.—Find the cubes of the top and bottom diameters in inches, divide the difference between those cubes by the difference of the diameters in inches, and multiply this quotient by .7854, and again by 1-3 of the depth in inches, and divide the product by 231. The quotient will be the number of gallons.

EXAMPLE.—Given, a tub-shaped cistern of a top diameter of 10 feet, a bottom diameter of 8 feet, and 6 feet deep. How many gallons will it contain?

SOLUTION.—Cube of 120 inches, the top diameter,	1728000
" 96 bottom "	884736
Difference between cubes of diameters,	843264
Divided by 24. difference of diameters, gives	.35136
Multiplied by .7854, gives	27595.8144
" again by 24, 1-3 the depth in inches gives	662299.5456
Divided by 231, cubic inches in a gallon, gives galls. *Ans.*	2867.0

RULE 2.—Add the top and bottom diameters in inches and divide by 2 for the mean diameter. Find the area in square inches of the mean diameter. Multiply the area by the depth in inches, and

divide the product by 231, and the quotient will be the number of gallons.

Example.—What are the contents in gallons of a cistern 8 feet diameter at the top, 6 feet at the bottom, and four feet deep?

Solution.—96 inches × 72 inches = 168 ÷ 2 = 84 inches, mean diameter; then 5541.77, area of mean diameter, × 48 inches, depth, = 266004.96 ÷ 231 = 1151.53 gallons. *Ans.*

Note.— The quantity of water which falls upon most farm buildings is sufficient to afford an ample supply for the domestic animals of the farm, when other supplies fail, were cisterns large enough to hold it provided. The average amount of rain that falls in the latitude of the Northern States during the year, is about 3 feet per year or 3 inches per month. Every inch in depth that falls upon a roof yields 2 barrels for each ten feet square, and 72 barrels a year are yielded by three feet of rain. A barn 30 by 40 feet supplies annually from its roof 864 barrels, which is more than 2 barrels per day, the year round.

The size of cisterns should vary according to their intended use. If they are to furnish a *daily* supply of water, they need not be so large as for saving supplies against summer and droughts.

The size of the cisterns in *daily* use need not exceed that of a body of water on the whole roof of the building, 7 inches deep, or two months' greatest fall of rain. Cisterns intended to save the water to draw from in time of drought, should be about three times as large.

To ascertain the size of cisterns adapted to roofs, &c.

Rule.— Multiply the length of the roof in inches by the breadth in inches, and that by the depth of the fall of rain required to be saved, and divide the product by 231, and the quotient will be the number of gallons. Divide the number of gallons by 31 1-2, and it will give the number of barrels.

Example.— What must be the capacity of a cistern to contain the water running from a roof 40 feet long by 30 wide, for 2 months: estimated fall of rain 7 inches?

Solution.— 480 inches, length, × 360 inches, width, × 7 inches, depth of rain, = 1909600 ÷ 231 = 8266 2-3 galls. *Ans.*

Note.— To ascertain the necessary dimensions of a cistern large enough to contain 8266 2-3 gallons, consult the foregoing table. It will there be found that a cistern 13 feet in diameter contains 827 gallons for each ten inches in depth. To give the cistern 10 times that depth, or 100 inches (8 1-3 feet) will make it contain 8270 gallons. Hence a cistern 13 feet in diameter, and 8 1-3 feet deep, will be large enough.

To further aid the inquirer in ascertaining the requisite diameters of cisterns for the above purposes, we subjoin an additional

TABLE, *showing the contents of circular cisterns in barrels for each foot in depth.*

5 feet.	4.66
6 "	6.74
7 "	9·13
8 "	11.93
9 '	15.10
10 "	18.65

Tanks for receiving rain water are sometimes employed in an upper apartment of the house, or some other convenient place. To prevent waste and damage these are generally lead-lined. Elsewhere in this work the use of lead for service pipes, has been incidentally referred to. As lead is often employed to line tanks and cisterns intended to hold water for domestic uses, it is well to understand the action of water upon this metal. This depends upon the amount of nitrous or nitric acids contained in the water. The presence of these acids are due to the decomposition of organic matter and of ammonia in the water. The sanitary value of water should be ascertained before it is used.

A writer in one of Cassell's publications, in speaking of this subject says: "Rain-water, however cleanly collected, even in the open country, is charged with carbonic acid gas, and if put into a bright leaden vessel, the metallic lustre of the vessel will be speedily dulled, and a film of carbonate and of oxide of lead will be formed on the vessel, showing that a chemical action must have taken place; and if the water be then analyzed, distinct evidence of the presence of lead in solution will be found. Water, by reason of contact with the atmosphere, will imbibe this gas, so that the same oxidation of the metal, though to a much smaller extent, will be found to take place, if distilled water (which is free from this gas) be put into a bright leaden vessel and exposed to the air.

"The composition of the oxide of lead and carbonic acid corresponds to white lead; and is formed through the action of the carbonic acid contained by the rain-water, or imbibed from the atmosphere in the case of distilled water. The difference of the action of rain-water and distilled water (kept from the atmosphere after being distilled) will be readily seen, if poured upon clean — that is, bright — lead, upon which there is no oxide, and allowed to remain for some considerable time; the action of the rain-water we have already described, dulling the metal, and forming a film or oxide upon it; while distilled water (which has been kept from contact with the air after distillation,) when poured upon the metal, and allowed to remain for any time, will be found to produce no solution of the metal, nor will analysis of the water show that any of the metal is held in solution. If a vessel in which is rain-water, or other water containing carbonic acid, be freely exposed, portions of the carbonate will become dissolved; but, independent of this, the carbonic acid, which is always imbibed from the air, proves much more effective for its solution, and consequently a considerable portion will be detected in solution by chemical tests after the lapse of some time. Nitrous acid is another property largely possessed by rain and other waters. This acid acts with great rapidity on lead. Ammonia, too, transformed into this acid, is capable of rendering poisonous the water in which it is present, such water being kept for a sufficient time in a leaden vessel.

"Waters which have been freed of their acids and of substances capable of producing them, have no action on lead, and may be kept with perfect safety, and without being poisoned or deterioated, in lead-lined cisterns, and conveyed by means of leaden pipes; while the practice of storing or collecting water which contains nitrogenous acid, in leaden cisterns or tanks for domestic use, is most pernicious; since the imbibing of lead into the system is sure to result. An invention has been patented, whereby the nitrates which act upon lead with so great power may be removed, as also organic matter held in solution in the water, provided the organic matter be not present in the water to too great an extent. The invention consists of coils of iron wire or portions of sheet iron being suspended in the water, and, after sufficient time allowed for the iron and water to act upon each other, filtering off the deposits which form. The explanation of the purifying of the water, by this process, from the nitrates and organic matter, is as follows: the iron decomposes the nitric acid, which is transformed into sesquioxide, and sinks to the bottom; whilst nitrous gas is set free, and oxidizes the carbonaceous substances which still remain in the water, producing carbonic acid and a lower oxide of nitrogen. This invention for purifying water has been well tried and tested by chemists, and is pronounced by eminent authorites to be thoroughly efficient and satisfactory.

"We spoke of water which would dissolve lead to a great extent, but is not generally liable to hurt, by reason of the presence of certain mineral ingredients. Such water, containing lead, is prevented, as by an antidote, from injuring the imbiber, and therefore is quite safe for consumption. The sulphates, phosphates, and carbonates of the alkalies and of the alkaline earths are the properties of this water, which serve as the antidote, or react upon the lead salt. All neutral salts, whose acids are capable of combining with lead or the oxide of lead, and form an insoluble compound, serve the same purpose, and act as an antidote, or, in other words, react upon the lead. The presence of ever so small a proportion, either of a sulphate or phosphate, in a water, will prevent the corrosion or oxidation of the metal; carbonates, too, act in a similar manner, especially the soluble bicarbonate of the alkaline earths; by the action of which an oxycarbonate of lead is produced—a most insoluble compound one part only being taken up by several million parts of water. It is in this way that mineral and spring waters, which contain one or more of these salts, may be kept without detriment in leaden vessels, or be conveyed through leaden pipes, as they will not take up any portion of the lead. No water, however, whether mineral or other, in which exists nitric or nitrous acids, either in a free state, or in combination, should be kept in leaden cisterns or passed through leaden pipes; neither must water impregnated with decomposing, organic, nitrogenous matter in solution. The salts we have named as existing in mineral waters will not prevent these acids, if contained in the water, from dissolving lead. Moreover, decomposing animal matter forms these acids, and therefore it is that water containing it will, without doubt, act upon lead with the same power as though the acids themselves were directly present in the water. The stages of transformation of decomposing organic matter are these: first, the production of ammonia; then, by further oxidation, nitrous or nitric acid; in the completion of transformation the power of corrosion becoming very great; so great, indeed, that several grains of lead may be found held in solution in every gallon of water. Thus it is that it would be dangerous in the highest degree to retain or pass such waters through leaden vessels; which would increase their unwholesomeness, already deadly enough by reason of their decomposing organic contents. The action of some spring waters upon lead is very great, so much so, indeed, that there are marked indications of lead being in solution in the water (action being allowed to continue through some time;) this, too, notwithstanding the waters contain sulphate. The cause of this is that the water contains, if not nitrous and nitric acids in a free state, considerable quantity of nitrates. Under such circumstances, notwithstanding that the sulphuric acid present in the water combines with the oxide of lead already dissolved, there remains the active solvent agent in the water, which continues to exert its action upon the metal of the vessel.

The insoluble precipitates which after a time corrode the interior of a leaden cistern or pipes, and form a solid coating over them, serve to protect the water from contamination, as they prevent its contact with the metal. Thus, it may be remembered that an old cistern is not nearly so likely to create danger as an new one; and it specially behoves the occupiers of all newly-built houses to be on their guard against this simple, but subtile, means of poisoning, or irremediably impairing the health."

Water-Pipes.— Lead is used chiefly for service water-pipes, and all things considered, it is, except in special cases, the best material employed for the purpose. But before adopting lead-pipes, it should be ascertained if the water to pass through them has been in contact with rocks charged with iron pyrites, or sulphuret of iron. Water so charged sometimes causes rapid decomposition of the lead, containing it and rendering it unfit for use. The oxide of lead is a soluble compound and poisonous; and oxidation is the first chemical action of water upon lead. But fortunately the chemical combination does not cease with this change; if it did the lead would in time, be entirely destroyed. The place of the oxide washed away and dissolved by the current, would be supplied from the original source as long as that lasted. But when the inner surface of the pipe becomes coated with the white oxide of lead, another change occurs which arrests further decomposition of the pipe. The carbonic acid in the water combines with the oxide, forming a hard insoluble carbonate and constituting a lining which adheres to the inner surface of the pipe. The water, no longer in contact with lead, of course, ceases to act upon it. Thus water free from substances especially destructive to lead, exerts a protective influence on lead pipe.

Tin-lined lead pipe should not be employed for this purpose for tin is attacked by water as readily as lead, and if water penetrates between the tin and lead decomposition is very rapid. But good service pipes are made of block tin. The salts of tin are not dangerous, and no serious injury can result from its solution. Where it is not advisable to use lead pipes by reason of the presence of mineral properties which render them unsafe, tin pipes may be employed. They are more expensive than lead, and where cost is not an obstacle, it is wise to use them.

Water is not poisoned by coming in contact with iron. Iron pipes are inexpensive and safe; but there is one serious objection to them

Rust often forms in considerable quantities in the pipe, and when used for laundry purposes, these pipes are very objectionable to housewives. Vegetables boiled in water containing particles of rust are discolored and unsightly, and tea made with it is rendered very dark in color If small, the rapid oxidation which takes place often fills the passage and renders them useless. If they can be lined successfully with cement or some unobjectionable material a very serious objection to them would be removed.

"There are other materials of which service waterpipe are constructed, but they are more or less open to serious objections. There is a field here for the inventive genius of man to achieve a triumph, and as the minds of numbers of scientific men, and intelligent inventors are turned toward it, it is believed that new, safe and cheap water service pipe will be produced, of great benefit to mankind.

"In using lead, for any household use, several well-established facts should not be lost sight of. When lead comes in contact with damp plaster it is rapidly deteriorated by reason of the formation of sulphate of lead, a most energetic oxidizing agent. Saltpetre attacks lead very powerfully and its presence contiguous to lead pipe should not be permitted. If lead comes in contact with another metal its destruction is rapid in consequence of electrical action which is set up. A case is mentioned by M. Detain which came under his personal inspection. The roof of a bathing establishment was covered with copper, but at one point lead was used in contact with the former metal. After a time the roof began to leak, and a workman being called in, the roof was found completely oxidized; it had kept its form, but on being touched it crumbled to powder. The lead was also in contact with an oak plank and its destruction was due to three causes: contact with the damp wood, the action of the vapor of water, and electrical action. New lead is subject to the attacks of certain insects which gnaw very minute holes in it; old lead, it is said, is not liable to their attacks."

DOMESTIC FILTERS.

It is well to know the quality of water used for domestic purposes. It may contain properties highly detrimental to health, and if such is the case, no time should be lost in applying a remedy. Filters, in most cases — except where mineral substances are present which filtration cannot remove — form the common method of removing the deleterious matters. The following upon the subject of filters is from an English work:

"Filters of various forms of construction are usually made use of in settled and civilized countries for the purpose of rendering the water required for drinking and cooking purposes pure; but there is, perhaps, no subject on which more erroneous opinions are entertained than on that of the purifying powers of the filter. Scientifically constructed, it possesses the power of removing mechanical impurities and taint from the admixture of foul gases — but saline and mineral solutions retain their characteristic properties and deleterious effects, notwithstanding that they may have been subjected to the action of the most perfect form of filter ever devised; and it is most remarkable that quantities of mineral, so minute as to render detection difficult, even by the most skillfully conducted chemical analysis, will nor unfrequently produce the most destructive effects on the constitution of the person who habitually imbibes water so charged. There are also gases which cause the bright clear water to become covered with tiny, dancing, bursting bubbles which are too apt to carry disease if not death, with them. The contents of these vesicles are the binary compounds of hydrogen, sulphur, and phosphorus, so often met with in the leaky, badly-constructed wells of the crowded streets and courts of large towns and cities. And here we wish to earnestly impress on all those who may own household property in thickly populated neighborhoods to most carefully examine into the condition of wells or reservoirs from which the water supply is drawn, lest death-dealing disease may be called into full activity by the agency of that which should be the great preserver of health. In the rural districts it too often happens that the water intended for drinking or cooking purposes is allowed to run in open unprotected channels for very considerable distances through fields and pasture-lands, before it reaches the dwellings of the consumers; such exposure not only causes serious loss by earth and plant absorption, and the attacks of thirsty cattle, but the acquirement of an almost endless train of contaminations and impurities, living and dead, animal, vegetable, and mineral. Earthen-ware pipes or bored-out tree-trunks placed end to end, or planks nailed into square tube-form should always be made use of to guard water which has to flow through meadows or open grounds; and particular care should be taken that the source or head of the supply is well protected against the inflow of foul and turbid rain-water from the surfaces surrounding it.

"The methods by which water is freed from impurities and fitted for the use of civilized man will vary with the nature of the contamination to be removed. Fine, heavy, sandy particles which impart a cloudy appearance to water when first dipped or drawn, rapidly settle to bottom of the water vessel, and remain there so long as they are undisturbed. Sometimes a small quantity of argillaceous matter prevents a complete and perfect clearing of the cloud to take place. Curiously enough a piece of common alum, the size of a large filbert, thrown into a pail filled with water, clouded as we have described, will cause a rapid clearing away of all particles of suspension.

"Water may also be freed from a number of foreign subtances in the following makeshift manner. In the hollow or pool made for the reception of the supply, form a small indentation or bay in such a manner that it may make a sort of notch in the bank. Procure a large bundle (say a yard in diameter, and four feet six inches long) of reed, either wheaten or marsh reeds will do; bind the whole very firmly together with twisted willows, or twig bands; cut both ends of the cylinder thus formed perfectly even; then with a sharp knife proceed to hollow out a deep cavity in the upper end of your reed bundle, until it presents the apearance of a deep conical basin; then place your prepared bundle, cup end upwards, in the hollow of your bay, and see that it fits the cavity prepared for its reception. Cut a straight thin pole of a length proportioned to the depth of water Bore a hole through it large enough to contain a long, stout, wooden peg. Drive your pole firmly into the bottom of the pond or reservoir, and impale your reed bundle on it. In a short time the water will be found to have percolated through the mass of reeds into the water basin, out of which it can be easily dipped for use.

"Reeds or grass stems may be converted into a very useful form of rough and ready filter in the following manner:—Gather a bundle of grass or reeds as large as your thigh, and tie it with several bands into a tapering conical form. Hang up your cone, point downwards, and pour foul water gently on its broad end; as it runs out at the bottom it will be rendered comparatively clear. Straining through a blanket filtering-bag, stretched on a hoop, may at times, be had recourse to. A most compact form of patent pocket filter is little larger than a common wine-cork, and will fit almost any sized bottle. It is composed of vulcanite, and its interior is furnished with a packing of sponge or fibre. On the air in the bottle being exhausted, by sucking through the tube, the bottle rapidly fills with filtered water which will continue to run out through the tube, which when dropped, acts as a syphon. When no bottle is at hand, water can be drawn into the mouth until thirst is quenched by merely placing the thumb over the open end of the cork, and exhausting the air by means of the tube. This form of filter is especially well calculated for the use of travellers, emigrants, or small householders."

A great many fluids — water, wine, spirits, jelly, syrup, tinctures, etc., often contain substances which should be separated, in order to render such fluids clear and bright. There are three kinds of filters — sponge for watery liquids, cotton for spirituous fluids, and wool for gelatinous fluids and oils. In every well-appointed kitchen there are tin or porcelain funnels. For filtering watery fluids it is only necessary to insert, in the choke of the funnel, a V shaped piece of sponge. All liquids, on being put into the funnel, will pass through the sponge, and become quite clear. When this effect ceases, the sponge must be removed, and well cleaned. Vinous fluids are best cleared by filtering through a cone of white blotting paper, shaped by folding a square piece of the paper from corner to corner, then folding the triangle into half its size and parting the folds; it will fit any funnel which will act as a support to the paper. Wines etc., poured into this, will run through perfectly bright. In some cases where the wine is only a little thick from flies, cork, or other mechanically suspended substance, it can be made quite clear by filtering through a wad of white cotton put in the choke of the funnel; and when this answers it is much quicker than the paper filter. For jelly and oil, wool alone is the proper medium for filtering. The belted wool jelly bag is pretty well known as the best means of clearing calves' foot jelly, and it also answers for oiling and other oil. These bags are, however, too expensive to be generally used; hence they are rarely seen in kitchens. A good substitute for the wool bag is a colander on the inside of which a new flannel lining should be fitted, made of double stuff. A wad of white knitting wool, put in the choke of a funnel, will do to filter any small portion of such fluids.

CELLAR AND STORE ROOM.

It is usual in this country to construct cellars under buildings. There are some advantages in certain cases, attending this practice, but it is one which we cannot recommend. Where circumstances will permit, a cellar for storing vegetables for winter use should be away from the dwelling. Many cases of dangerous fevers have been caused by the foul air from dark, damp and badly ventilated cellars. Confined air, without the purifying influence of sunlight soon becomes impure and unwholesome, and in a vast majority of cases, cellars beneath houses, serve as a reservoir for such impure air, which, in addition is often loaded with decomposing organic matters and foul gases given off from decaying vegetables.

Upon the subject of cellars under dwelling houses, D. H. Jacques, in his "Manual of Rural Architecture," uses this language:

"Cellars under dwelling houses are generally deemed indispensable. They are certainly very useful; but there is an evil of such magnitude connected with them, that some have advocated their entire abolition. They are almost universally manufactories and reservoirs of foul air, which, finding its way upward by means of doors, windows, stairways, and crevices in the floors, diffuses its noxious elements through the rooms above, and becomes a fruitful source of disease. It is not necessary that they should be half filled with rotting garbage to produce this result. The surface of the earth is filled with decomposable substances, and whenever air is confined in any spot in contact with the ground, or any changeable organic matter, it becomes saturated with various exhalations which are detrimental to health. Means must be provided, therefore, for their thorough ventilation, or cellars must be abandoned altogether.

"A cellar, to fully serve its purposes, should be cool in summer, impervious to frost in winter and dry at all times. The walls should rise one or two feet at least above the level of the surrounding ground, and should be laid in good lime mortar, or at least pointed with it. The thickness of the wall should not be less than from fifteen to eighteen inches; and if the house walls above be built of brick or stone, two feet is better. The cellar should have a drain from the lowest corner, which should be always kept open; and each room in it should have at least two sliding sash windows, to secure a circulation of air. In very cold climates, those portions of the walls above the surface of the ground should be double, either by means of a distinct thin wall on the outside or by lathing and plastering on the inside, and be furnished with double windows as a further security against frost. An outside door with a flight of steps is desirable in every cellar, and in one connected with a farm-house indispensable."

It is better to have a cellar for storing vegetables disconnected from the house, or at least, not directly beneath the dwelling. Where-ever they are located they should be kept clean, pure and well-ventilated. Vegetables should be frequently examined, and such as are decaying should be removed at once.

Some housewives put milk and butter in the cellar in proximity to vegetables. This is not advisable for milk readily absorbs a taint from any foreign substance in its vicinity.

Every well-planned house contains a convenient store-room in the most eligible place for such a room. And the prudent housekeeper not only finds it a great convenience, but is able to make it serviceable on the score of economy. It is too much the habit of housekeepers in towns and cities to depend for daily supplies upon grocer-shops. Besides entailing numerous vexations and disappointments where these are nearly the sole dependence for ordinary articles which enter daily into housekeeping wants, it is very poor economy.

In purchasing supplies it is advisable to ascertain what articles certain dealers are celebrated for, and buy from them. As a rule whatever purchases are to be made should be made direct with the dealer, and the quantity ordered should be ample to meet the requirements of the house for some time; and it is always the best plan to buy for cash, for a discount may be had when this course is followed. A good supply of a good article saves both trouble and money. It should be remembered that a large reliable establishment, being in a condition to buy in large quantities and take advantage of the market, is enabled to sell at a proportionate scale of profit.

The objection is sometimes urged against this policy, that when articles are in large supply there is apt to be extravagance in their use. Such need not be the case. The improvident use of articles in store should be checked at once by the housekeeper. Extravagance or waste should not be tolerated, and dishonest servants (who spirit away articles to their friends) should be discharged for the very first offence of this kind in which they are detected.

ICE HOUSE.

It has not been very long since ice was looked upon as a luxury; now it is everywhere considered a necessity of civilized life. Various commercial pursuits of vast magnitude depend upon ice for their success, while ice itself constitutes a business in which millions of dollars are annually invested.

It is not necessary to specify the numerous cases in which ice serves a useful purpose. For family use and convenience its utility is very generally understood. Yet there are many families in the rural portions of the land where it is a stranger in summer, when it is so necessary. This luxury may be enjoyed by every one at very little cost where the winters are cold enough to form ice. A cheap house may be provided, which will contain a sufficient quantity of ice to supply all the demands of a family,—and at very light cost. A few dollars expended for lumber will make a house that will last for years. A few days in winter, when there is comparative leisure, will afford time enough to procure a supply of ice, sufficient for summer use.

Formerly it was believed that an underground structure was necessary for the preservation of ice, but such is not the case. But it is sometimes more economical to build them in the side of a hill, and this plan saves some labor in handling the ice. Where this plan is chosen a hill sloping towards the north is the best to select, and the location should be high enough to allow of complete drainage. If the drain can be made so as to convey the water that may flow from the ice-house into the bottom of a stream or pond this course should be adopted, for this will prevent the admission of air into the ice-house through the drain.

The reason that ice-houses underground were held to be indispensable, was that this plan preserved ice better because there was less heat than in ice-houses above ground, and that heat was the chief enemy to the preservation of ice. Such however, is not the case, for damp is far more prejudicial to ice preservation than heat, and hence it is believed that ice-houses above ground are much the best.

For a cheap, temporary ice-house the following is a very good plan: Select a place on the north side of some building, or densely shaded by thick foliage. Spread a large load of sawdust on the ground, pile the ice, (saved in square cakes) on the sawdust, building up a square pile, say eight by ten feet high. Then set up scantling and build a board house around it, two feet longer each way than the ice, and fill in with saw dust all around, and two to three feet deep on the top; then cover with boards or slabs. Be sure to secure drainage.

A more permanent house may be had by adopting the following plan: Make a frame ten feet square, of studding two by ten inches, and eight feet high. Board up on each side, and fill in with sawdust. Shingle the roof with a ventilator on the top; when the ice is put in cover with saw dust to the depth of three feet. Bank up with dirt, which not only forms a drain but cuts off all chance of a draught of air from below. If saw-dust can not be had, chaff or fine straw will answer the purpose.

In all plans for the construction of ice-houses the essential point to be secured is the use of materials which are non-conductors of heat. The next important point is to secure perfect drainage.

A mode of constructing a permanent ice-house, in common use and effective in preserving ice, is as follows: The frame or sides should be formed of two ranges of upright joists about six by four inches; the lower ends to be put in the ground without any sill; the upper to be morticed into the timbers which are to support the upper floor. The joists in the two ranges should be each opposite another. They should then be lined or faced with rough boarding, which need not be very tight. These boards should be nailed to those edges of the joists nearest each other, so that one range of joists shall be outside the building and the other inside the ice-room. Cut out or leave out a space for a door of suitable dimensions on the north or west side, higher than the ice will come, and board up the inner side of this opening so as to form a door-casing on each side. Two doors should be attached to this opening — one on the inner side and one on the outward, both opening outward. The space between these partitions should be filled with charcoal dust, tan, or saw-dust, whichever can be the most readily obtained.

The bottom of the ice vault should be filled about a foot deep with small blocks of wood or round stones; these are leveled and covered with wood-shavings; over which a plank floor to receive the ice should be laid; some spread straw a foot thick over the floor, and lay the ice on that. A floor should also be laid on the beams above the vault, on which place several inches of tan or saw-dust. The roof should be perfectly tight, and it is usually best to give it a considerable pitch. The space between the roof and the flooring beneath should be ventilated by means of a door or lattice window in each gable. The drain can be constructed in accordance with the situation, the only thing requiring attention being to have it carry off all the water settling at the bottom, and not be so open as to allow the passage of air into the vault.

There are various methods by which ice, or artificial cold, may be produced, in addition to the original one by the employment of ice or snow stored in the winter. These are by evaporation, by the adadmixture and solution of saline substances, or by the use of ponderous machines, more remarkable for their ingenuity than their practical value to the household.

Consolidated snow, stored in pits and caverns, was in use among the classical nations, and is still employed in southern countries; but in the north, where it can be readily obtained, ice is more generally used; in fact, in those latitudes where ice is abundant, it is usual to scrape off any frozen snow that may be formed on its surface, before collecting it for storing.

The collection and storing of ice does not require any elaborate description. The best time to save it is when it is perfectly solid, and before it has become honey-combed by warm weather. It should be cut or sawed out of the lake or stream in solid blocks, as large in size as can be conveniently handled, and it should be stored while the weather is favorable. There are tools made expressly for the purpose which lighten and lessen the labor of saving ice. Where the business is carried on extensively, ice plows drawn by horses are employed, derricks are brought into requisition, and with implements and appliances provided to expedite the work, a large amount of ice can be saved and stored in a day.

In some sections of this country devices for saving ice, where it seldom forms, have been gotten up, but ice is saved in such immense quantities in the northern states, and can be shipped at such comparatively light cost to almost all localities, that these inventions are rendered practically useless

FURNISHING THE HOME.

To properly furnish a home, be it the abode of wealth or the cot of the humble, requires the exercise of judgment and taste; for, as has been said repeatedly, on the correctness of the taste displayed in furnishing a house, or only a few rooms, depends altogether the air of comfort, which either will wear, and a corresponding degree of pleasure or discomfort in those who live in them. Indeed the proper furnishing of a home is a fine art. How often upon entering a strange room, does one experience an uncomfortable feeling by reason of the incongruity of the furniture, the inharmonious coloring of the draperies, the loud design of the wall paper, the inartistic hanging and grouping of pictures and ornaments, and decorations. Decoration and ornamentation are not synonymous words. Decoration signifies something that is portable, as vases and pictures; ornamentation refers to the paper on the walls, elaborately worked ceilings and cornices, carved or beaded doors and window-casings. A profusion of decoration and ornament in a pretentious house, with but small means to support it, is not a mark of good taste. The indiscriminate grouping of inharmonious colors shows likewise, a lack of good taste. It is said that "the eye creates its own beauty," which is true; nevertheless a popular fashion in furniture, as well as dress, which is far from beautiful, may be considered tasteful.

There are some plain, common sense rules for furnishing homes and rooms properly, which should be remembered. Large furniture never looks well in small rooms. Plain, well shaped furniture, without angles or stiffness, shining and clean, without dust-holes, always looks well. The style and cost, however of furnishing a house will be governed mainly by the means of the occupant.

To furnish and decorate a home with taste is not necessarily an expensive matter. Beauty and elegance do not always depend upon cost; but rather upon a proper recognition of appropriateness exhibited in the selection and application of means at command.

Good taste is true economy. A man or a woman with ideas of correct taste can produce very happy effects with very humble materials. An infinite variety of ornaments, costing nothing except trifling labor, may be supplied. There is a truth and wisdom in the words of an anonymous writer who suggests that there is surely no better entertainment for the spare hours of an intelligent man than the embellishment of his home, so that it will be an agreeable place for himself and family to dwell in and for his friends to visit. He may be assured that his children as they grow up, will become better men and women, and more useful members of society, if they live in a home which is itself a work of art, and in which they are surrounded with objects stimulating to the intellect, the imagination, and all the better feelings of their nature.

Upon the subject of true economy and good taste, the observations of a writer in an eastern journal are so apposite and express our views so nearly, that we adopt the following extracts, in lieu of any additional remarks of our own on this point:

"The idea of making a home a work of art is not a mere piece of sentimentalism, but it is one which ought to address itself in the strongest manner to the minds of the most practical of our practical people. There is nothing that is better worthy of adornment than the house we live in; there is no good reason why our homes should be dull and uninteresting, if we can make them otherwise; there is no reason why we should spend money for expensive furniture, expensive pictures, expensive objects of all kinds, to put in our homes, if we can get cheap things that will answer our purpose as well or better, or if we can manufacture ourselves during odd moments various trifles of no pecuniary value, perhaps, but of infinite artistic worth, in connection with a well-arranged plan for home decoration.

"Certainly no better amusement can be found for any man than the decoration of his home, or one that will be worth more to him in solid comfort and permanently valuable results.

"A home arranged and fitted up with taste will be better cared for, it will beget habits of greater neatness, it will inspire nobler thoughts, it will exert a pleasanter influence not only on its inmates, but on a whole neighborhood, than one filled with the costliest objects selected without discrimination, and jumbled together without plan and merely for ostentatious display. The influence of the one is refining and elevating, that of the other is vulgarizing and depressing, for good taste cannot be bought, and it is a more worthy ambition to seek to excite admiration by a display of æsthetic culture than it is to do so by exhibition of mere purchasing power.

"Believe us, a home that is fitted up with taste will be the resort of a better class of people, and more genuine enjoyment will be shown in visiting it, than one which has nothing but the costliness of its contents to recommend it. However much astonishment and vague admiration the one may excite at first, it will finally become an eyesore rather than an attraction, while the other will reveal a new and beautiful feature at every glance, and will never lose its pleasing power.

"Apart from all this, however, is the all-important, hard, practical fact that there is an actual economy in good taste. Thousands of persons annually buy gaudy and vulgar carpets that are not and cannot be objects of interest, when for much less money they might in humbler material, but of equally substantial quality, purchase something much better suited to the character of their rooms and much more in harmony with the surroundings. If a room is arranged as a work of art, a carpet is only an item in the general effect, and it is a matter of no consequence that it should excite remark on its own account.

"What we want when a stranger enters our parlor is that he shall be impressed by a certain beauty, by a certain completeness, by a certain richness of effect, by a certain home feeling, as if the place were the dwelling of refined people, who think enough of their home to strive to make it beautiful. It is not necessary that he should remark whether our carpet is Brussels or ingrain, whether our wall paper cost ten cents or $5 a piece, whether our furniture is of the most costly woods, elaborately carved and covered with the most expensive materials, whether our curtains are of the finest lace or richest damask, but rather that our combinations of colors are harmonious, that our furniture is solid and substantial, and, in fact, that our room has a cosy, comfortable look, which gives some hints as to the character of its owner, and which seems to extend a large and liberal welcome.

"Of course, persons who have plenty of money can produce effects that are impossible to those who have little or none, but there is also a rare pleasure in doing a great deal with almost nothing, and in doing it one's self, instead of leaving some one to do it for us. So many persons only value things by what they cost that in these pages we shall take especial pains to set forth the artistic worth of inexpensive materials. The furnishing of our homes and the expenditure of money are absolute necessities and we may as well try to get the full worth of our money while we are about it. If we have good taste, and choose to exercise it in the purchase of equally desirable materials, which cost, say, one-third less than others of perhaps less excellent design, we are not only so much better off in a pecuniary point of view, but we actually add something to our sum of happiness —

an item to be thought much of, for money is not worth having at all if it does not make us happier."

To furnish the house tastefully the general principles to be observed consist in the beauty of form, the fitness of each article of furniture for its special office, the harmonious combination of color, and the adaptation of ornament to the particular purpose to which it is applied. The size, style and character of the furniture, no less than its quantity and quality, should be considered in connection with size and proportions of the room in which it is to be used. And in the further decoration of rooms, fitness and appropriateness in the wall-paper, the curtains or blinds, and various other things should be considered. It shows a lack of taste and judgment to select dark and sombre-colored paper for the walls of bed-rooms, or put up broad thick curtains or blinds when there is but one window in a room. Neither is it in accordance with good taste to select brilliant colors or staring patterns for walls where it is intended to hang pictures. And in the furnishing and decoration of the house this general rule may safely be observed — to wit: avoid extravagant forms or designs, such as arrest attention merely from their incongruity or striking novelty, selecting rather articles which are graceful from their simplicity. One thing in which many persons show a great want of taste is in the selection of inharmonious colors. To a refined taste nothing is more offensive than an incongruous jumble of hues thrown together in one room, where each seems striving for supremacy, and the entire combination is obnoxious, while certainly nothing contributes so much to the pleasing effect and elegance of a room as a pleasing arrangement and harmony of color. In order to secure this object it is necessary to begin with the decoration of the walls and ceilings of our rooms: and the same general principles, as well as many of the details, which apply to one room, apply to all. At this point the suggestions in the subjoined paragraphs from "The Home" in Putnam's series of Handy Books are appropriate:

"Let us commence with the ceiling. It is to be hoped, for the sake of comfort, as well as of beauty, that this is high, but if, unfortunately, it should be low, do not have it of a dark tint. White is most generally used, because it looks well with all kinds of wall papers, but it is not always desirable. A delicate pink, or buff, throws down a more agreeable and softer light on bright days, if the paper hangings will allow these tints to be used. If the ceiling is high it may have a little deeper tinge, if desired — rose or maize color — but even here care should be taken that it is not dark in effect. The ceiling should always be lighter than the walls.

"In regard to wall coverings, paper hangings are the most popular and are used everywhere. Even the rough interiors of log cabins in the far West are often covered with illustrated newspapers, thus economically combining paper hangings and pictures. There is, we think, no style of wall paper to be compared in beauty with the plain-tint paper. The effect is fine, and yet unobtrusive; it does not dwarf the size of a room as pattern paper often does; on it pictures show to good advantage; it corresponds with any style of furnishing; and it is always in fashion — or, rather, it never looks *bizarre*, no matter what particular fashion may happen to be popular. There is a prevailing opinion that it soils easily, but this is a mistake for it will keep clean as long as any paper.

"There is a style, forty inches wide, beautifully finished, with a fine soft gloss that gives the wall the appearance of being painted. This sells at a dollar a piece. There are other styles, both glazed and unglazed, some very pretty and of excellent quality for sixty cents a piece.

"It is not the fashion now to have an unbroken surface of wall from the ceiling to the base-board. We are, in many matters, returning to old methods, having discovered that our ancestors were not quite devoid of taste, and among other things have adopted the wainscotings that were their pride. And, in rooms that are not wainscoted, we also follow their fashion in a like case, and put around the wall, about three feet above the floor, a moulding called a chair-rail. This serves the double purpose of breaking up the blank uniformity of much space with the same coloring, and of protecting the walls from being scratched and rubbed by the furniture.

"This moulding can be used very effectively with the plain tint paper by having a dark tint below it, and a lighter one above; a rich yellow-brown below, and cream color or amber above the chair-rail; or a heavy purple-grey below, and a light stone color above; and other combinations may be made with finer effects than these suggested, by considering the situation of the room in regard to sunshine, and various other matters. These plain-tint papers should have a rather narrow border, with rich, bright colors (something in the style of the arabesque or scroll patterns is most desirable) on very dark grounds, black generally being the handsomest. A narrow gilt bead border for an edging, between the paper and border ing, will be a very pretty addition.

"The moulding for the chair-rail should be tacked on where the two papers are joined. Moulding is sold expressly for this purpose but something suitable can be bought from any cabinet-maker or carpenter for five or six cents a yard for common pine, and ten and twelve cents for finer woods. The former presents a very handsome appearance when stained with black walnut stain.

"The narrow gilt bead bordering is eight to twelve cents a yard, and the rich bordering, described above, from ten to twenty cents; but a perfectly plain bordering, in rich dark colors, very suitable for this style of papering, can be purchased for five cents a yard.

"But this plain tint for wall hangings is a matter of individual taste, and, if you prefer a figured paper, get a small, cheerful pattern on a very light ground for a room that does not enjoy much sunshine. And it is best to get rather a light paper where the room is sunny, for in winter the brightness is no objection, and in summer the room is kept partially darkened during the heat of the day. Decided greens and blues are very trying to the complexion. A very pretty style of figured paper is all of one color in different tints. But if this is of *very* light shades, it is apt to be characterless, and gives no relief to furniture and window hangings. Stiffly designed figures, great bouquets, and wild and wandering patterns, on the other hand, possess entirely too much character. It is difficult, on the whole, to select figured paper that will altogether satisfy you after it is put on, and if you buy it solely with reference to its individual beauty, you are likely to be disappointed. You are to consider the effect of your walls *as a whole*, and not in detail; and as much taste is needed in designing them as any part of the house furnishing.

"Gilded paper is inartistic, although for several years it had the sanction of fashion, and is still used to some extent. Stripes add to the apparent height of a room, but are stiff and awkward, and the eye soon wearies of them. Be careful about the greens in wall papers, for many of them are colored with poisons.

"If your room has a chair-rail, the figured paper should only be used above it. The same may be said of striped paper, unless it is in imitation of wood, in which case it can be used below with good effect.

"Panel-paper is formed on the walls by using plain tint paper in stone colors, and paneling it with narrow bordering that is made for the purpose. This is an expensive style, and is hardly suited to rooms of ordinary size; but it is very pretty for the lower part of the wall, below the chair-rail, as a suggestion of wainscoting.

"The papers sold by paper-hangers as parlor grades are from one to three dollars a piece; but satin paper of excellent quality can be bought for fifty cents; and we have seen very pretty walls hung with papers that only cost twenty cents a roll."

Very good American wall papers, in pleasing colors and patterns, can be had at from twelve to fifteen cents a roll and still better qualities at a trifle more. There is very little excuse for unsight, walls when paper can be had so cheaply.

The recent invention, comparatively, of wood-hangings for walls, in place of paper, is receiving considerable favor. These hangings make an attractive wall covering. They are much more costly, however, than paper; but it is claimed for them that there is econom in their use from the fact of their being so durable. The woods ar furnished in various shades and when artistically hung produce very fine effect. The hangings may be obtained in either America or foreign woods; the latter are the most expensive.

Of American woods the ordinary grades range from one dollar to a dollar and a half per thirty-six square feet. The wood is cut very thin, and has a backing of paper on which a paste, supplied with the wood (being made expressly for securing the wood to the wall) is spread when the hangings are ready to be put on. A panneling is also made to match the hangings; it is in very narrow strips of wood and is tacked to the wall.

This wall-covering has one thing to recommend it which housewives will appreciate. It may be washed without injury, so that walls need not be disfigured by spots and stains with which walls are often marred.

The most beautiful walls and the most costly, are those which are frescoed and painted. They retain their beauty for a long period for these can be washed and thus kept clean. The cost of this method of decorating walls, however, places it beyond the reach of persons of limited means.

But wall-papers will probably, always be employed far more generally than any other method of wall-covering; and as this constitutes the largest portion of the interior decoration of the house, (since it extends over the largest surface,) it is, consequently, one of the most important things to be considered, as it will invariably be the means of making each appartment attractive and pleasing, or of destroying the harmony of the general effect in their ornamentation and decoration. The color of the carpets and furniture must be considered in this matter so that harmonious effects may be secured.

In selecting carpets there is very often a want of care, a lack of judgment, and an absence of good taste. Carpets, generally, are the most expensive articles in house-furnishing and very great care should be exercised in selecting them, in order that they may be suitable in pattern, style, and colors, and of good quality.

The same authority which has been cited in regard to the economy of good taste, makes the following observations about carpets:

"The trouble about many of the patterns on ingrain carpet is they are so badly mixed up that all true artistic effort is lost. It is in most cases desirable, therefore, to select a carpet with a distinct design in one or two colors, or two shades of the same color. A prevailing tint is thus secured for the floor, the pattern serving, as a pattern should in most cases, merely to break up the uniformity, and to please the eye by variety. If a very rich effect is desired, a Persian pattern is the best, although this style is not seen in its perfection except in costly carpets. Some of the imitations of Persian designs in ingrains are quite good, however, and are infinitely better than almost any of the large patterns gotten up here. A Persian carpet in rich dark colors furnishes a room very handsomely, and it admits of a greater variety in colors used on the other furniture than does a lighter carpet with less elaborate patterns.

"For a small room a very pretty light carpet is a small chinchilla ground, or a light gray ground with a delicate pattern of the same color, but a few shades darker upon it, and surrounded with a green or crimson border. Another very tasteful carpet, which, however, is better suited for a hall or library or dining-room, is a flat ground of crimson, green, or dark blue, with a small, simple figure — say a *fleur de lis* or something similar placed at intervals of about eight or twelve inches.

"A light carpet with furniture, wall decorations, etc., in harmony, gives a particularly refined and elegant appearance to a room. In such a room inharmonious or tasteless objects are sooner noticed than they are in one less severe in its style; and although it is not difficult to furnish a room in this manner so as to produce an agreeable effect, care must be taken and goodly judgment exercised, in order that there may be a sort of artistic correspondence between all the different articles of furniture and the purely ornamental objects introduced.

"Where richness of effect is desirable, a dark carpet, with dark walls, may be used. These will admit of considerable variety in the outline and in the color of the objects placed on and against them, and in the furnishing and ornamenting of such a room a much freer play of fancy is allowable, and a little extravagance in matters of taste may be indulged in without serious consequences. A room should not, however, be carpeted or papered with dark colors unless the supply of light is abundant, otherwise it will have a somber and dispiriting effect, no matter how elegant may be its appointments. When, as is very commonly the case, there are two parlors, with folding or sliding doors between, it is the usual practice to furnish them alike. If the rooms are of very moderate size or very nearly of the same dimensions, this is perhaps the best plan to pursue. When the rear room, however, is much smaller than the other, and especially if one has an end and the other a side light, a very charming effect can be produced by contrast. The same pattern of carpet can be very often procured in different combinations of colors, one of which may be used in the front room and the other in the rear one. Care, however, will have to be taken that the colors harmonize, otherwise the result will be anything but pleasing. When the same pattern cannot be procured, in different tints, two different patterns of as near as possible the same size and of the same general character may be employed."

When a new carpet is selected it is essential to take into consideration the size of the room and the manner in which it is lighted. A large room, well lighted, will look better for having a carpet of large pattern and brilliant colors, but to put such a carpet down in a small room would be very bad taste, for it will make the room look smaller than it is. A dark pattern on a small room is to be avoided for the same reason. A light carpet of an attractive, modest pattern will apparently increase the size of a small room, and add to the artistic effect.

The appearance of a carpet is always improved by a border There are cases in which a border reduces the apparent size of a room, but if borders of appropriate patterns are selected, this defect is nearly always obviated by the finish thus given to the room. The cheapest carpets are much improved in appearance by the addition of a border. Dark colors in the border look best in contrast with light carpets, and dark carpets require light borders.

Be it remembered that cheap carpets are poor economy. A few months of wear will render one threadbare. A good carpet is thick, closely woven and pliable. Tapestry lined with hemp, and Ingrain which is flimsy or woven with cotton chain, is hardly worth making and putting down.

The most durable carpets are Wilton and English Brussels, but as they are too costly for the vast majority of people, the demand is chiefly for Three-ply or Ingrain carpets. These are of various grades, styles, and prices, costing from 35 cents to $1.00 per yard.

The retail price of carpetings of the various grades **per yard, is** about as follows:

English Brussels	**$1.50**	**English Ingrain**	**$1.00**
Wilton (cut Brussels	**3.00**	**American Ingrain**	**.75**
English Tapestry	**85 to 1.00**	**Erench Axminster**	**2.50 to 4.00**
Velvet (cut Tapestry)	**2.50**	**English Axminster**	**2.50 to 4.00**
Three-ply,	**1.10 to 1.25**	**American Axminster**	**2.25 to 3.50**

So much depends upon the effect produced by harmonious colors in furnishing a house, that some well-defined rules are not out of place. As applicable upon this point we give the following from a recognized authority upon the subject of color:

"The rainbow is universally acknowledged to be the most perfect and beautiful arrangement of color in Nature, and may be considered our ideal standard. Its colors were divided by Sir Isaac Newton into 360 parts, of which violet occupies 80; indigo, 40; blue, 60; green, 60; yellow, 48; orange, 27, and red 45. These were supposed by Newton to be simple colors but Sir David Brewster has proved that from the three primary colors — red, blue and yellow — all the other prismatic tints can be produced. All colors depend upon the power of their substances to absorb and reflect light; in every ray of white light there are the following primary colors — red, yellow, and blue, which, with their intermediate and extreme tints, constitute what is called the solar spectrum. Different rays are absorbed by different substances; in opaque, white substances none are absorbed; and in black substances all are absorbed. In particular colors what is absorbed is complementary to what is reflected; thus, a blue substance has absorbed red and yellow, or orange, which is complementary to blue; a yellow substance has absorbed red and blue, or purple, which is complementary to yellow; and a red substance has absorbed blue and yellow, or green, which is complementary to red. Citrine, russet, and olive, with the greys and browns, are compounds of these colors, in unequal proportions. Black results from a mixture of blue, red, and yellow, of equal intensity and in equal proportions. Colors are regarded as warm or cold, positive or negative; thus blue is a cold and negative color, and orange a warm and positive color. Red is neither warm nor cold. All warm colors are contrasts to cold colors.

"Light is understood to be an active, and darkness a passive principle. White color is an intermediate phenomenon: it is warm as it approaches the light, and cold as it recedes from it. *Yellow* is the color nearest the light, and is agreeable and gladdening. Polished gold gives a good and high impression of this color, which must be perfectly pure to be pleasant. *Reddish Yellow*, or *Orange*, is powerful and splendid, and excites lively, quick, and aspiring feelings. *Yellowish Red*, or *Vermillion*, is the active side in its fullest energy; and impetuous, robust men, and savage nations are especially fond of this color. Children when left to themselves, never spare the vermillion and orange.

"As yellow is always accompanied with light, so it may be said that *blue* brings a principle of darkness with it. As a hue it is powerful, and in effect a kind of conflict between excitement and repose. Blue is cold, and has an affinity with black. *Reddish Blue*, or *Lilac*, is a little more active in character, though it may be said to disturb more than enliven. *Bluish Red* or *Purple*, still increases the unquiet feeling as the hue progresses, and it may be safely assumed, when used for dress, ribbons and other ornaments, that it is most attractive when it is used sparingly. *Red.*— The effect of this color is as peculiar as its nature; it conveys an impression of gravity and dignity, and at the same time of grace and attractiveness. The first, in its deep dark state; the latter, in its lighter tint, and thus suits both the aged and the young.

"*Green.*— The eye experiences a healthy and peculiarly grateful impression from this color; if of equal proportions of blue and yellow, the eye and mind repose on it as on a simple color.

"*Harmony of Color.*— There are two kinds of harmony in color— one of analogy, the other of contrast. When the three primary colors are placed before us, our eyes accept the vision with a certain degree of pleasure; but they are most gratified when the intermediate colors are properly introduced, and the whole scale of the colors which constitute a ray of light is presented to them. True harmony consists in those colors being brought together which, though they may not be placed exactly in the regular order seen in the rainbow or in the chromatic scale, yet act in accordance with each other upon the eye, and produce no uneasy sensations within it, but rather afford it pleasure. The phenomena variously described under the names of 'accidental colors' 'complementary colors,' &c., were first investigated by Buffon, and are of the greatest importance, since they show that the eye especially demands completeness, and seeks to eke out the colorific circle in itself. Any one may prove this for himself, by fixing the eye on a red wafer lying upon a sheet of white paper, when it will appear fringed with a faint green; if, after observing this for a considerable time, the eye is turned to another part of the white paper, where the red wafer cannot be seen, a spot will be apparent of the same color as that which appeared to fringe the red—viz. green; hence green is considered the complementary color to red, being composed of two of the three primary colors, of which red is the third, the eye apparently supplying the deficiency necessary to complete the component parts of a ray of white light. This experiment may be repeated witn the other two primary colors, blue and yellow, when it will be found that the orange, which responds to blue, is composed of yellow and red; and that the purple or violet, suggested by yellow, contains red and blue.

"Harmony of analogy is the most abundant in Nature, and signifies an affinity or similarity of color. Sunset and sunrise are the most brilliant examples of this. A more sober and gradual kind is that in landscape where the blue of the distant mountains changes as it advances toward the foreground, through olive and every variety of cool and warm green, to the sandy bank at our feet, glowing with yellow, orange, and russet. The next consideration is contrast of color, which produces force, animation, and variety; it gives splendor to the gorgeous plumage of tropical birds; and flowers and butterflies owe to contrasted colors half of their beauty and dazzling effect.

"*Colors by Artificial Light.*—As colors are very different by day from what they appear by night, it is advisable to consider this in our remarks. The light diffused being yellow, this color is rendered pale, and is frequently lost entirely; orange and red become warmer by this light; reds at night look more scarlet, as they borrow some of the yellow light; crimson looks brighter than by day; sky-blue acquires a green tint; dark blue, by absorbing the light, looks almost black; and there is often a difficulty in distinguishing between blue and green; purple becomes redder if it inclines to red, and darker if to blue. Blues to look well by candlelight, should be of a bright tone; and if a dark blue must be used it should have another of a lighter tone beside it, or be interspersed with white. A bright green in conjunction with blue will aid in lighting up the pattern, and is therefore useful for increasing the effect of a carpet or other colored work by night-light."

Carpets last much longer when a lining is placed under them, than if put down without. It is made of various material, but the best is of fine wool, stretched between layers of paper. It is moth proof; costs fifteen cents per yard.

If the carpet is of gay colors a rug or two of plainer appearance will add to the appearance of the room; or if the carpet is composed of dark shades, light colored rugs should be selected.

It is held by some persons, that, for sanitary reasons carpets should be discarded altogether, but it is not at all probable that their views will ever be adopted; at least, not until the millenium arrives. But many good housekeepers take up their carpets in the Spring and supply their place with matting during the Summer. Carpets are comfortable in winter and desirable on account of their appearance. In Summer the objections to keeping them on the floor are, they make a room warmer than it would otherwise be, they get full of dust, and seize upon and hold moisture and taints in the atmosphere, unless frequently and thoroughly aired. During wet weather in the Spring and Summer seasons, carpets always gather moisture; and if such weather continues for any length of time, and the rooms remain closed, however tight the house may be, it is impossible to prevent dampness in your carpets. After such weather the house should always be thoroughly aired; and in case a mouldy smell is observed, it is advisable to make fires to aid in getting the house thoroughly dry.

When a floor-covering for Summer, other than carpets is desired, matting usually serves the purpose. Canton matting one yard wide at from thirty-five to fifty-five cents a yard can be procured. There are other widths, a yard, and a quarter and a yard and a half, which come higher in proportion to width.

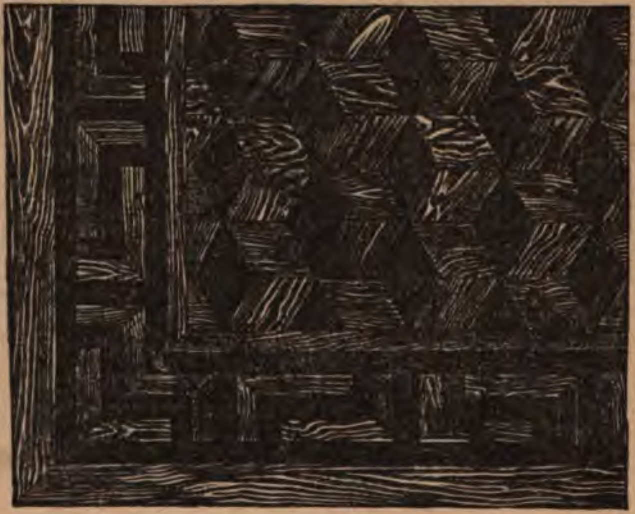
Matting should never be tacked down. In the first place, it breaks the straw wherever the tack goes through, and in the next place it spoils the floor.

Canton mattings are woven together in pieces two yards long, and these pieces are then joined together in a continuous roll some forty yards in length. It is deemed advisable, when matting is used for a floor covering, to sew the seams firmly where these two yard pieces are joined together, and then to sew the breadths together, the same as in carpeting. In this way matting is much more serviceable, besides the floor is not marred and spoiled with tacks.

But many persons object to matting and within a few years a disposition has been manifested among a portion of the people of this country to cover the floor with wood carpetings or adopt marquetry flooring. This is inlaid work; or work inlaid with different pieces of divers colored wood. In European countries marquetry is highly prized, but it is comparatively new in this country.

A method of manufacturing marquetry has been patented and is employed in Chicago by the patentee. It is as follows:—The planks of a bottom floor are provided at suitable distances with dove-tail grooves across their width, into which are slid lower male dove-tails of double dove-tailed keys, so that the upper male dove-tail parts of the keys extend above the bottom floor. The opposite inclined sides of the keys form of course, another female dove-tail, into which are slid pieces of polished wood of different colors and grains, having their ends perfectly beveled, thus forming any desired design.

It will readily be seen that a complete floor may be made at the manufactory, and transported in parts to any place, and easily put down. This is the only dove-tailed marquetry ever manufactured, and the dove-tails being across the face of the board, the floor is perfectly firm and solid, and warping is thereby prevented. The minimum thickness is seven-eights of an inch.



Marquetry receives and retains a high polish ; and the inlaid pieces of wood of every shape and variety, give it a highly ornamental appearance. A fine effect is produced by laying the grain in a variety of directions, and also by laying different varieties of grain of any one wood. Many consider a variety of grains in better taste than a variety of colors.

Much taste may be displayed in the selection of different woods. Our native woods which may be freely used, include ash, oak, mahogany, black walnut, maple, cherry, etc. Foreign woods may be used, if desired.

Some persons fear that the taking up of the old floor and in the putting down of a new one may mar the room in some way. There is not the slightest danger of this. The new floor is made of the same thickness as the old, and no imperfections appear around the sides of the room, in any part of it. This flooring is admirably adapted to halls, music rooms, dining rooms, libraries, banks and insurance offices, and other rooms in public or private buildings. Marquetry is best adapted, however, for private residences, and may be made to order from designs furnished by architects and others.

In washing marquetry floors, rub them clean, using as little water as possible. When they become dim from use, make them thoroughly clean. Take a mixture of one-third spirits of turpentine, and two-thirds raw linseed oil, adding half a gill of Japan to three pints of this mixture. Apply this with a sponge or woolen rag, rubbing it well into the floor, and then wiping it off with dry, clean rags. If the polish is worn entirely off the floor, wash it clean, and when thoroughly dry give it a coat of white shellac varnish, and then rub the floor over with the mixture above described.

Since an inclination has become manifest to discard carpets, at least during the summer season, and marquetry has found favor, to some degree, another invention has come into notice in the shape of wood carpeting. It is made of well-seasoned and kiln-dried hard woods, cut into strips one and an eighth to one and three eighths inches wide, and a quarter of an inch thick, and glued on to heavy cotton drill. The wood is then planed and oiled. It rolls up like an oil-cloth; can be sent anywhere, and can be laid by any good carpenter. It is nailed down with one and a quarter finishing nails. It can be put down to look like ordinary flooring of one kind of fine wood, or laid with fancy designs, centre-pieces, etc.

Wood carpetings are of various styles and patterns. It is claimed for them that they last a long time, are insect proof, that dust cannot penetrate them, that there is no inconvenience from their use in any way, and that they are a substitute for marquetry, at comparitively light cost. They have not been in use very long; it is too soon to say that these claims have been satisfactorily settled in their favor.

Plain standard goods in wood carpeting, one yard wide sell at two dollars a yard. The finer styles sell by the square foot, at from fifty cents to one dollar and a quarter.

Let us now direct our attention to the windows. A house ought to have inside shutters or blinds; but many do not, and in these inside shades are required. They are necessary even with outside shutters. Sor housekeepers use only shades for window hangings, because in the first place, curtains gather so much dust, secondly, because of the labor necessary to properly care for them. Woolen curtains must be packed away in summer, and during that season curtains of washable material must be used; and these things take time, and care and labor. Another argument used against them by persons whose incomes are small is, that they are expensive. Nevertheless we think curtains are desirable. Expensive curtains need not be purchased; very pretty curtains may be procured at light cost; to keep dust from them merely requires a little more trouble than to keep the ordinary articles in a room free from it, and so far as the labor they occasion is concerned it should be remembered that to have our houses and homes pleasant and attractive presupposes a certain amount of daily care and work.

In that little work "The Home," issued by G. P. Putnam & Co., we find the following appropriate remarks upon curtains

"In furnishing a room, curtains are of the first importance. Better get a Brussels instead of a velvet carpet, or an Ingrain in place of a Brussels, than to have your windows bare of curtains. Without them a room filled with furniture looks unfinished, and with them a poorly-finished parlor gains something of grace and style.

"Woolen reps are much used for curtains in winter. They are from two to four dollars a yard; and, if put up by an upholsterer, from twenty to forty dollars a window. Their heavy folds are rich and elegant, and they add greatly to the warmth and cosiness of rooms with a cold exposure. But they also help to darken the rooms and to make a short winter day seem still shorter. Rooms that are lived in, unless quite large, will be more pleasant with window hangings of lighter materials.

"Silk curtains are only suitable for very handsomely furnished apartments; should be made and put up by an upholsterer; and will cost sixty dollars and upward for each window.

"Lambrequins are now almost universally used, and, when gracefully draped over curtains of the same or corresponding material, increase the beauty of the effect. But the plain, stiffly-scalloped, heavy woolen lambrequins, without a fold or festoon to break their rigid exactness, that so frequently we see hung over shades or lace curtains, are ugly in the extreme, and the two materials put together in that way are as well suited to each other as a merino basque to a lace over-skirt.

"Lace is the most beautiful, graceful, airy, and light of all curtain material, and looks equally well with the matting, and chintz-covered furniture of summer, and with the warm colored carpets, and heavy furnishing of winter. Real lace can be bought now of fine quality and handsome styles, from eighteen to twenty-five dollars a yard, atlhough there are certain styles that sell at 'fancy' prices. It is not as much used now as formerly, even among the wealthy, because the Nottingham laces of the present day are so fine, soft and fleecy that it is difficult to tell them from the real laces, and the designs on them are generally much more elaborate and beautiful. The prices range from one dollar and a half to fifteen dollars a yard. Those at the first named price are very pretty, and not 'cheap-looking'; and quite handsome curtains can be bought at from three to five dollars per yard. The difficulty of doing up lace curtains and preserving that soft fleeciness which is their chief beauty, interferes with their popularity. In cities they are usually sent to persons who make it their business, but this is rather expensive, and in the country, impossible. But you can do them up to look like new ones if you know how, and are careful.

"You can have very pretty and graceful parlor curtains (and these are especially suited to country homes) at a very small expense, by buying a sufficient quantity of Swiss muslin, at fifty cents a yard, and a few yards of heavy silk cord. In measuring your windows, remember that the curtains should fall to the floor, and allow a little for looping back. Get a couple of extra yards, or more if necessary, of the lambrequin, and loop it with cords in some graceful fashion. Also loop the curtain back, at about three feet above the floor."

The same authority has the following in reference to shades:

"If shades are the only hangings for the windows, they should be the painted shades in solid colors with borders. Those with figures and landscapes on them are in bad taste. The bordered shades sell at from two dollars upward, with patent rollers. Dark blues and stone colors are popular hues in these shades, but they throw, when drawn down, a most dispiriting gloom over the apartment. Light stone-colors, buff, and shades in fancy browns are the most desirable, and, when purchasing, remember the color of carpet and walls, and do not get a violent contrast. If however, you are going to hang curtains or lambrequins over them, let the shades be of Scotch Holland linen. You can buy these ready made, or make them yourself. The linen can be purchased, yard wide, for thirty cents a yard. The rollers and slats of wood for the bottom, slides, cord, and tassels will also be needed. These fixtures and trimmings cost from forty to seventy-five cents a window. Be exact in your measurements, and make and hang them carefully. The patent rollers are much more handy than the cords and slides, and last a long time, whereas the fixtures in common use soon get out of order. The patent rollers cost one dollar apiece. White is the best color for these shades, and the trimmings should be selected in reference to the general coloring of the room. Blue fades sooner than any other color."

We come now to putting the furniture into the house. For the sake of convenience we will commence with the parlor, though if one's means are inadequate to meet the expense of furnishing everything at once, the parlor ought to be the last room furnished. Of course, in importance, the kitchen occupies the first place, then the bedroom, next the dining-room, and last of all the parlor. Where it is necessary, the kitchen may used to serve the meals in, or the room used as a dining room may also be used for the reception of company; but if possible let there be rooms enough for separate and distinct uses in housekeeping. This is what every good house-keeper desires, and in treating of the subject we will proceed upon the theory that these rooms are to be furnished.

A suit of parlor furniture consists of four ordinary chairs, a large easy chair, a smaller easy chair and a sofa. A suit of plain furniture in walnut, covered with all-wool rep, seats and backs upholstered, can be bought at the furniture ware-rooms for eighty-five dollars; one somewhat better in finish and ornamentation will cost one hundred dollars, and others still more highly ornamented and elaborately finished cost more in proportion to the finish and expensiveness of material used. The purchaser may vary the suits, and frequently in place of four ordinary chairs there are substituted a couple of reception chairs, a sewing chair, or other chairs, rockers, tete-a-tetes, lounge, or other things to suit the taste. Hair-cloth upholstering is out of fashion, and no one will regret it, for it never was attractive in appearance or desirable on any account. For chair and sofa coverings the materials most in use now, are woolen reps. These are of various qualities. The cost ranges from one dollar seventy-five cents to four dollars a yard. If more costly and richer material is desired for furniture, there are silk reps which cost from six to eight dollars; and still more expensive coverings may be had in brocatelle, satin and velvet.

The subjoined paragraphs from that sensible little work, "The Home," is in point in this connection:

"In woolen reps green and crimson are the best colors for wear; and there are beautiful shades in brown that wear very well. Blue fades very soon. The striped reps make handsome coverings for a single chair, but not for a whole suit. It is not necessary to cover all the articles of furniture with the same color; a little variety gives a more pleasing effect; only be careful that you select colors that look well together. If the carpet be very gay, however, it is better taste not to vary much the coloring of the furniture.

"A centre-table adds to the home-look of a room, and is, indeed, a necessity where the family gatherings are held. Walnut tables with marble tops range from sixteen to thirty-five dollars, according to size of table and kind of marble. But a much cheaper table of painted wood will look quite as attractive with a pretty cover on it, and a lamp, with its softly shaded evening light, inviting readers and workers.

"A lounge is a very comfortable thing to have in your sitting-room, only don't have it too handsome to be lounged on. A corner Etagere, or What Not, will cost from five to eight dollars; a side Etagere from twelve to sixteen. These are sometimes used as book-shelves, instead of receptacles for knick-knacks, where a book-case is unattainable.

"The latter, or some substitute, is almost a necessity in our parlors when there is no library. They are expensive articles — a very plain one, indeed, costing twenty dollars, and desirable styles ranging from thirty to sixty-five. A handsome style of book-case is a low one, about four and a half feet high, with a flat top, on which is placed a bust or vase. These are about the same prices as the others. If there is a recess in the room, a very passable book-case may be manufactured by employing a cabinet-maker to construct a framework of shelves, of walnut or stained wood, that can be set into the recess without injuring the walls. The doors must be simply frames for the glass, the panes of which should be large; tack inside, on the framework around the glass, woolen or silk stuff, laid in plaits, or gathered up in the centre, and finished with a rosette of the same.

"Where there are two communicating rooms, it is best to furnish them alike, and use them in the same way. But some prefer to furnish one for a parlor and the other for a sitting-room, throwing open the doors, or closing them at pleasure; and this is a convenient arrangement often in cities, where calls are more frequently made than visits. When this is done the window hangings should be the same in both rooms, and the furniture so ordered, as to material, coloring, etc., that the two rooms will not put each other out of countenance.

"In the summer you will wish to keep the room partially darkened during the glare and heat of the day, and when flies and dust are waiting for admittance. But use discretion, and do not make it so dark that your eyes are injured by straining them over your work, and your visitors announce their entrance by running up against the sofa, or falling over a footstool. In the winter let in the sunlight freely. You will all thrive on it. Of course this will, in time, fade the most durably colored carpet, but seasons will pass before this becomes noticeable, and an old carpet that is faded is not half as suggestive of poverty of purse, and narrowness of living, as an old one that is 'as bright as new.'

"Such a room can easily be kept free from dirt, dust and cobwebs; and what housekeepers call 'litter,' there must be in one that is much used. But you need not worry on this account for a little comfortable disorder is often much more sensible than stiff, unyielding neatness.

"This is the room for your household gods, so you can have in it your little work-table with your sewing materials, and the fancy work-basket. * * * * Perhaps there is a chess-table, a backgammon board, or a box of parlor croquet. Your cat curls up on the rug; your bird sings in its cage by the window; the gold-fish dart about within their little glass prisons; there are flowers here and there, if only a rose on the mantel-piece, or a hyacinth opening its perfumed blossoms to the sunlight in the window-sill.

"A visitor ushered into such a room, at once feels at home. A cordial welcome greets him in the very air. It is emphatically the 'house-place' and the home-life is all around and suggests topics for interesting and friendly talk. It is all so very different from stiffly sitting in a twilight room, where there is a faint glimmer of white and gold, and a delusive sheen of satin and velvet, and where the hostess sits with idle hands, her thoughts in her work-basket, and her conversation of the weather and the gossip of society. No wonder that a half hour is considered a monstrous allowance for such visits as these.

"And when money has become plentiful, and you have added to the modest little home, a library, picture gallery, music hall, state bed-rooms, and magnificent suits of elegantly furnished parlors, don't fail to keep the 'house-place' for your family and old friends, and the new ones who are worthy such distinction."

The bed-room will next receive attention. So far as the walls are concerned, the same general remarks will apply to this room that were given for the parlor. Plain tint paper is preferable to any other, and where the furnishings are to be of white, a pink tint is desirable, for the soft tint it gives to white window-curtains and bed-coverings. If any other tint is preferred for the walls, let the furnishings be of a color that harmonizes with it. What has been previously given upon the subject of color, will enable us to choose understandingly in this matter. The fabrics generally used for curtains are Nottingham lace, Swiss muslin, and chintz, and very often a good quality of American muslin is used, neatly trimmed with white cotton fringe, or ruffles. It is claimed, however that chintz window-hangings at thirty-five cents per yard are almost as cheap as the latter, and much more sightly. Very nice chintzes can be purchased at from fifty to seventy-five cents per yard. Curtains of this material are made with or without lambrequins; and when the latter are preferred they should be of the same material as the curtains. They may be trimmed with ruffles or with fringe, and a broad band of chintz with some stiff material for lining should be supplied for looping the curtains back.

Never use woolen window hangings or woolen upholstery in your bedrooms. Many persons employ shades from choice, in these rooms. Those of green color should be avoided on account of poisonous dyes which have been used in the manufacture of most of them. For these, fixtures, cords and tassels are required. The most convenient articles for the purpose of raising and lowering shades, are the patent rollers and although slightly more expensive in cost, are the cheapest in the end, as they last a long time and are not so liable to get out of order as fixtures.

If curtains, however, are preferred, a window cornice is necessary. They are made of walnut, or cheaper wood, stained or covered with paper, plain or in some pattern or design. Gilt cornices of various patterns and prices may be had by those whose purses enable them to gratify their tastes in this direction. Imitation of gilt cornices are cheap-looking affairs which it is not advisable to purchase.

In the winter season a carpet upon the floor of the bed-room adds to the comfort of the room. The color of this carpet should be light and the figure small. In summer the bed-room carpet may properly be dispensed with, for the room will thereby be rendered cooler, and more free from dust. With or without carpets, rugs should be laid by the side of the bed, and in front of the bureau and wash-stand.

Ten pieces are a full suit of ordinary bed-room furniture, these consist of a bedstead, bureau, wash-stand, towel-rack, small table, five chairs, and a rocking chair. Suits of the more costly kinds, however, vary in the number of pieces. Solid walnut bed-room sets (within the means of people generally) varying in style, finish, and number of pieces can be purchased at from sixty-five to one hundred and fifty dollars. This is not the limit, in price, by any means; those who can afford it, and desire to gratify a taste for very fine furniture will not be at a loss to find such as will meet their wishes in style and price.

Maple sets are more costly, in the same styles, than walnut, as the wood requires a high polish to bring out its beauty. The price of oak furniture is about the same as walnut.

Cottage furniture — so called — has of late been somewhat out of favor: but the better kinds, (that which is well made and nicely painted) is still sought for. It may be had in any color to suit the taste of the purchaser. The plain styles may be had for thirty-five dollars a suit, and prices for finer suits range from that price all the way to one hundred dollars.

Pine furniture, stained and varnished, in imitation of more expensive woods, can be had at prices below those of any of the foregoing; but it is less durable and is easily marred. Oiled furniture especially walnut, deserves the high favor in which it is held; it is durable, does not show scratches readily, and very little attention or labor is required to keep it clean.

Where the means of persons are too limited to admit of buying more than a few articles — and those of the most inexpensive kinds — it is not very difficult for a person with a little mechanical skill, and a few tools, to supply the house with cheap, simple, and tasteful home-made furniture. Time thus employed, after the hours devoted to ordinary business, is far better spent than to fritter it away foolishly.

The kind of furniture to which we refer is so simple that no very nice calculations are required in its construction, and it is more substantial and durable than the cheap and frail articles found in furniture stores.

The materials required for it cost but little, the whole wood-work being of deal boards; aside from these the only articles required are screws for fastening the parts together, oil-cloth for covering tables and chairs, glass for book-case doors, a few hinges and locks, and a little varnish. It is not necessary to conceal joints, and as it is the design to show the entire construction in the finished work, absolute precision in fitting may be dispensed with. The construction of every part of such furniture is substantial, for strength is given where it is required, which is not always the case in the modern creations of the cabinet-maker. Thus, tables, stands, chairs, stools, book-case, sideboard, etc., very neat in design, may be had at very small cost. Designs and styles may be varied to suit the taste of the maker. When neatly stained, (or trimmed with wood of contrasting colors,) and covered with oil-cloth, a suit of such furniture is by no means to be despised.

A case is recorded of a young man employed as a draughtsman in a manufactory who had little inclination for the frivolous amusements which so largely consume the evenings of many people. For a time he passed his leisure hours in reading, but his sedentary habits told upon his health. A physician recommended more active recreation and pointed out carpentry. Acting upon the suggestion, he made some designs for furniture, bought tools and began to carry out his plans. The eexrcise restored his health, he soon surrounded himself with many ornamental articles of furniture — the result of his labors — while the beauty of design and excellence of each article was a matter of wonder and delight to all who saw it. Many articles of use and ornament may be thus supplied.

One third of our lives are passed in sleep — a benificent provision of nature to restore the fatigue and waste of physical and mental powers which go on during the day. The importance of undisturbed and peaceful slumber ought never to be lost sight of. Late hours are calculated to undermine the health of even the most vigorous and robust persons, and hence we should not only guard against them, but assist nature by providing favorable conditions for repose. Two primary requisites for this purpose are a pleasant room and a good bed. The importance of light, airy and well-ventilated rooms to sleep in, has been heretofore considered in this work, and it is not necessary to repeat here, what has been said about them.

The first thing to supply after the bedstead, is a set of springs; these are more desirable than slats, sacking or under-bed. There are various kinds of springs which are elastic, noiseless, and durable, varying in price from five to ten dollars. In buying, be sure that they are easily examined and readily cleaned; if they do not possess these recommendations do not buy them, unless you want to be annoyed by vermin.

A hair mattrass weighing forty pounds, laid on elastic springs, is the most comfortable bed. With this, an under-bed is not necessary, but one is sometimes used, and when such is the case, it should also be of hair, as either husks or straw interfere with the comfort afforded by the elasticity of the springs. Hair mattrasses are too expensive for many houskeepers, and hence those made of cotton, husk, or both together, or moss, hay, and straw, can be had at prices to suit any range of income. But the cheaper kinds are nearly worthless, and should not be bought if it is possible to get a good bed. Feather beds are costly; and they are not always desirable, especially in summer. When they are used, an under-bed, or a mattrass next to the springs is indispensable. A good feather bed weighing forty pounds will cost from thirty to forty dollars, the price of feathers varying somewhat in different localities. A good pillow will require five pounds of feathers, and a bolster six. Large pillows of from eight to ten pounds are preferred by some housekeepers, and where these are used, a bolster is not necessary.

So far as other bedding is concerned — sheets, pillow cases and shams, blankets, quilts, coverlets and bed-spreads — it is not necessary to speak of these in detail. The prudent housewife will acquaint herself with the cost of articles and materials such as suit her taste and her husband's income. But it should always be borne in mind that the *cheapest* goods are nearly always the most expensive. Good goods cannot be had at the prices charged for poor articles, but generally it pays best to buy them, for they wear enough longer to more than make up the difference in cost.

"The toilet-table,* that was once considered a necessary addition to every bedroom, has vanished into remote country places. And yet it is a beautiful and graceful piece of furniture, and redeems a modern bedroom from that stiffness that is too apt to be its characteristic. Those made to set into corners are not recommended. They entirely lack the artistic effect of the larger table with straight back, and semi-circular front, that should be placed in a prominent position. These can be clad in the simple drapery of white Swiss muslin and glazed cambric; or in the costly attire of satins and laces.

"Have a light table, made of ordinary pine wood, the top semi-circular in front, and straight at the back. It must be made so as to stand firmly, but must also be easy to lift; for one advantage of these tables is that they can be carried about the room and placed wherever the light is best. It should be about three feet high, and thirty inches across the straight part.

"Tack around this blue, rose-colored, or amber cambric, or any hue that matches or harmonizes with the prevailing tone of the room. Make it a little full at the corners. Get sheer white muslin, Swiss or French; allow fullness enough for it to fall in soft and graceful folds, without there being enough of it to 'stand out' around the bottom, or look 'bunchy' at the top; hem the top and bottom; and gather it below the upper hem. With the sewing-machine stitch these gathers firmly to linen tape, laid under them.

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* "The Home."

"Around the edge of the table tack thick cotton tape, or a strip of cotton cloth on which you have previously sewed dress hooks at convenient distances apart, with the hooks upward. On the tape of the valance sew little loops corresponding with these hooks. The valance can then be easily removed for washing, and put on again when clean.

"For the top make a cushion half an inch or less in thickness by quilting together pieces of old calico. Over this spread your cambric, and over this again your muslin, turning your edges under the calico cushion, and in the case of the muslin, tack it so lightly with needle and thread that it can be readily taken off for washing. Lay this on the table, and tack in three or four places with tin tacks to keep it from slipping. These will be concealed by the standing ruffle of the valance. Or a silk cord of the color of the cambric could be run around the edge of the table under the valance ruffle. Or the valance could be made without the little ruffle on the top, and a wide muslin ruffle sewed on the cushion so as to fall over the edge of the table. This is the prettier style, but more trouble.

"A pin-cushion should be made of the same material.

"A small mirror, with a small-hinged prop at the back, will complete the furnishing. Or you can have a prop fastened on the back of a common looking-glass. The frame can be entirely concealed by drapery of muslin caught back with cords, or tied with ribbon.

"A toilet set of plain white china of thirteen pieces will cost seven dollars and a half, and a set of stone china about five dollars. The former is the most desirable, as it looks well as long as it lasts, while the glazing wears off the latter after a time. A Japanese toilet set, including water-carrier, foot-tub and slop-jar will cost four dollars.

"One or two attractive pictures are particularly desirable for a bed-room, as there growing plants are entirely out of the question, and even cut flowers are unwelcome unless inodorous. The only desirable fragrance in a bed-room is that imparted by perfect cleanliness, and by pure, sweet air; with, perhaps, a faint breath of lavender in the sheets."

In furnishing the bed-room, the furniture may be varied to suit the taste and purse. Whatever furniture dealers may call a "suit," need not govern the purchaser. The pieces may be selected without regard to suits. The five chairs in the suit may be dispensed with, for instance, and a little rocking-chair an easy-chair, and a couple of ottomans substituted. Or a lounge covered to correspond with the carpet and window hangings may be supplied. You may have the frame made by a cabinet maker at light cost, and cover it yourself with chintz like your curtains.

DINING ROOM.

A neat attractive and home-like dining-room adds very much to the pleasure and comfort of living. Some people seem to think that a room used merely to serve the meals in, is of no consequence so far as its appearance goes. But it should be something more than a place merely to hold a table and a few chairs, where we may satisfy the appetite as quickly as possible, and go about our business; it should be a place of social enjoyment, where the family may meet not only for the purpose of eating, but for pleasant conversation also. Food, to be properly digested, must be pulverized and masticated before reaching the stomach. We are too prone to bolt down our victuals before they are sufficiently prepared for digestion. Healthful food, well cooked and prepared for the table, and served properly is enjoyed with better zest when sufficient time is taken to eat it than when swallowed almost as it comes upon the table, as though we grudged our bodies the time necessary to take food necessary to sustain them. If the surroundings of the dining-room are pleasant, the pleasure of the family reunions at the table are enhanced. We are too apt to forget how much these things add to the comfort and health of human life.

All things considered, the oak-paper, when a good imitation of the wood, is the best for a dining-room. It does not show fly-specks like the lighter kinds of tinted paper, nor does it reveal dirt as soon as the dark colored papers. White shades are the most appropriate for dining-room windows if the walls are covered with oak paper, though buff are frequently employed. If the walls, however, are light the window hangings may be of a darker shade. Dining-room curtains, according to the *gospel* of the fashionable upholsterers, are rep in winter and lace in summer. But every one will not follow in that direction, adopting some kind of material for dining room curtains that is not so costly. For this purpose white swiss muslin is much used and makes very pretty curtains. The chintzes make nice window draperies, and when it is simply a question of taste, without being one of means, satins expressly for this purpose, beautiful in design and rich in material can be employed, giving the room a luxurious appearance.

The dining-room floor should be oiled, stained, or painted. Carpets are used very generally, but they are not the thing for the dining-room. If the floor is painted or oiled, have a druggett laid beneath the table and a nice rug in front of the hearth and the sideboard. Oil-cloth for a dining-room floor should be discarded, for it is difficult to keep it clean.

Extension tables now are almost universally used in the dining-room. The walnuts range in price from fourteen dollars all the way up to whatever the purchaser desires to pay. Oak, or other woods, may be had, if preferred. Dining room chairs, cane seats, in different woods, and good ones (not the slimsy affairs held together mainly with glue) are three dollars apiece. Cheaper chairs may be had, (made of wood inferior to walnut, oak, or maple,) at twenty-four dollars per dozen.

A very nice side-board may be had for forty dollars. If one can be afforded, it will be found useful and convenient. But this piece of furniture may be dispensed with, if you have a convenient closet for china; in that case a side table should be provided upon which to place extra dishes, glasses, &c

A few appropriate ornaments are desirable in the dining-room; but they should be simple and in harmony with the place. Good taste here discards statues, busts, statuetts, and vases, unless the latter contain flowers or grasses. Flowers and plants are very appropriate and desirable. But flowers on the table, sideboard, stands, and brackets, are exceedingly grateful to the eye in this room, and not less so are plants growing in the windows, or on flower stands. In choosing pictures for the dining-room, fruit or dessert pieces are objectionable for the reason that if we do not have the real article it is not agreeable to be always tantalized by these reminders. The same objection holds good to wax imitations of fruit, jellies, etc. These are appropriate and beautiful (provided always they are well executed,) in their place. Pictures of dead game—animals, birds, and fish—are not always suggestive of appetizing reflections. But a selection of pictures may be made which will be in good taste in this room, enliven its appearance and, from the ideas associated with them, contribute to the enjoyment we experience in partaking of food.

THE KITCHEN.

Though the kitchen is really first in importance, its consideration was left for the last in deference to the precedence generally given by housewives to the other apartments of the dwelling.

In building the house, particular attention must be given to the relative position of the kitchen, and its construction and arrangement, to ensure convenience and comfort. A vast deal of labor, vexation and loss of time is saved by having a convenient, well arranged kitchen. The walls should be white-washed, for whitened walls, when soiled may be made as bright as ever with very little expense. It can be done without calling in outside help, and the room is thus kept pure and sweet. Some persons prefer tinted walls in the kitchen, and they look well, but if they become marred or soiled, a professional white-washer must be called in to renew the color. The kitchen walls and ceilings should be whitewashed at least twice a year. The wood-work in this room is usually painted, but this is objected to because it soon looks dirty, and becomes dingy and bare in places from frequent washing with soap in order to keep it clean. It is preferable to oil and varnish the wood, or to simply oil it, as it can be kept clean with very little trouble.

The kitchen floor ought to be even and smooth, and oiled two or three times during a year. Some persons prefer painted floors, and both oiled and painted floors require less scrubbing than those not so treated to keep them clean. It is not advisable to use carpets on kitchen floors, for in the first place they soon become badly soiled and, secondly, dust is constantly arising from the carpet and mingling with the food when it is being prepared. During cold weather it is well enough to lay strips of carpet in front of the tables. Oil-cloth is much used for these floors, but there are two serious objections to it One is, that nothing but a good article should be used (for the poorer qualities will very soon wear out) and the only qualities worth putting down are expensive, costing from one dollar and a half to two dollars per square yard; in the next place oil-cloth requires as much labor to keep it clean as a bare floor, and unless those who wash them off are careful not to *scrub* them with lye soap, they will soon be destroyed. If, however, a carpet must be put down, a good rag one is the best, because it is thick and heavy, unless we except wood-carpeting and we are not well enough acquainted with its merits to recommend it. A kitchen carpet should not be tacked down but fastened to the floor with rings slipped over smooth headed tacks. This will permit taking it up and having it well shaken at least once a week.

There should be plenty of light in the kitchen, and hence in very many kitchens there is no need of shades, provided always the windows have blinds. If the room is so lighted as to make these desirable, shades in grey, buff or light brown are appropriate. Don't use paper shades in the kitchen for generally they have to be replaced several times during the year. Muslin curtains are preferred by many housekeepers for their kitchen windows, because they soften the light without shutting it out. Cross-barred muslin costs twenty-five or thirty cents per yard. They may be made without fullness, run a string through the hem at the top to draw or close the curtain. Or the equally old-fashioned rod may be used with rings sewed on to the curtain to slide back and forth on the rod. But shades on rollers are preferable to anything (unless it be inside blinds) for they are easily managed and do not require washing.

The advantages that housewives secure in having the kitchen floor painted are too great to be lightly considered. A well-painted floor is one of the most desirable conveniences for a kitchen, for the labor is greatly lessened of keeping this apartment clean. A hard-working woman must, otherwise, spend much time and strength scrubbing and cleaning and be subjected to much annoyance, and vexation because of grease and other stains upon her floor. Any skillful woman can easily paint her own kitchen; two quarts of oil, three pounds of ochre and one pint of japan, will paint a floor twelve by eighteen feet, and the time and labor thus saved will be worth many times the cost. And when it is painted no matter what her work may be, whether cheese-making, churning, canning fruit, or butchering in one quarter of the time required to clean an unpainted floor she can make hers as neat as ever, with not a trace of grease or stain, and sooner than it was cleaned, it will be dry and ready for use.

Every housewife, whatever may be her worldly circumstances, has her own idea about the quantity and kind of kitchen furniture required. A young wife who has just left the old home, where everything was at hand which could facilitate the work in the kitchen, frequently finds herself without many things which she deems necessary to well-regulated kitchens. In a small family, and especially with beginners whose means are small, it is not advisable to introduce articles which can be properly dispensed with. As time elapses and the want of more utensils and furniture for the kitchen become necessary, in all probability the means of the family will be sufficient to supply them without inconvenience.

But this is decidedly a question of means. There are a labor-saving devices which can be purchased by those who have means to do so, and the amount paid occasionally, by some families for inefficient help, would purchase machinery that would be a lasting benefit, and in some cases, might prevent the necessity of hiring.

We all enjoy work better when we have pleasant conveniences to do our work with. The housekeeper will not find her work drudging when she has a convenient, well-arranged kitchen, with pleasant furnishings for the room. Children will like to help about the housework if there are articles to do with that make it pleasant for them to learn. We do not know of any better use for well-earned money than to purchase with it that which shall lighten labor, and make home pleasant and save the time and strength, and health of the workers, whether they be men, women or children. It is a mistaken idea that anything will do for the kitchen; rather let us make this most necessary room in our houses, neat, cheerful and attractive. Our homes may be very humble, our rooms few and small, but if we make the most and best of what we have to do with in these homes, we may receive our guests, no matter who they are, without one word of apology.

The subject of stoves and ranges for the kitchen is a perplexing one. In regard to ranges there is still wanting a perfect device, simple in construction, economical and serviceable; one that burns but little fuel, not as a matter of choice but of necessity, and gives the greatest amount of heat without waste of fuel. We do not say that very good ranges cannot be found; many are, indeed, wonderful contrivances for saving labor under a variety of circumstances, and in the hands of competent persons who understand how to manage them. When a range is employed it is indispensable to employ a cook who knows how to manage it, else there will be a great waste of fuel and destruction in all directions. To know how to cook with simple means and moderate appliances is an art which may be acquired and never forgotten; and this in a vast majority of families in this country is what is desired.

There are a great many kinds of cooking stoves, and for each kind great advantages are claimed. With a knowledge of what such a stove should be, a housekeeper may find what she requires. In purchasing a cooking stove be sure that it has a place for roasting meats, and is supplied with conveniences for broiling; also that the oven is properly located for heating with no great addition of fuel, and that it does not consume fuel to waste. It should have a revolving grate to facilitate cleaning it; and be supplied with a full complement of utensils.

All well regulated kitchens have a sink. It should be not less than two and a half feet long by eighteen inches broad. Painted iron sinks are the most durable kind. Two tables are required, and three or four wooden chairs, and these things complete the ordinary furniture; of course it does not include the necessary articles which are required in the kitchen, the kind and quantity of which, is more or less, always determined by circumstances.

No mention has been made of hall and stairway thus far, and very little need be said in regard to them. Good taste will indicate, in connection with what has been said of the rooms of the house, what is appropriate or necessary in furnishing them. Very much, of course depends upon their size and situation.

THE WASH-HOUSE.

Many families living in the country, and especially upon farms, prefer to have a wash-house detached from the dwelling, claiming that this plan is more convenient and comfortable, as well as preferable on the score of general cleanliness. For the benefit of this class of persons, the following observations of the late Mr. Loudon in his Encyclopedia of Architecture, upon this subject are given :

"The wash-house should be well lighted; and therefore, if united with other offices, it should, if practicable, be made a corner building, and have windows on two sides.

"Instead of portable round tubs, which, are the most inconvenient devices for washing by hand, oblong troughs, about three feet in length, eighteen inches wide at the top, one foot wide at the bottom and eighteen inches deep, should be fixed round the two lighted sides of the room. Each trough should have a hole and stopper in the bottom; and close under these holes should be a gutter, common to all the troughs, which may convey away the waste water to the manure tank. In one corner or side of the room the boiler should be placed; and over it a supply pipe from a cold water cistern. Pipes may be conducted from both the cold water cistern and the boiler, so as to deliver, on turning cocks, cold or hot water, at pleasure, into the trough.

"The floor of every bath-house ought to be very carefully paved, with an inclination of an inch in a yard towards one corner, in which there ought to be a trap-drain leading to the manure tank. The inclination, which will hardly be perceptible to the eye, or recognized in standing or walking, will yet be most useful, by directing all the water, which must occasionally be spilt on the floor, to the point where it will be carried off. Close under the ceiling there ought to be several openings communicating with the outside air, to carry off the steam, and in the bottom of the door there ought to be corresponding openings to admit fresh air; both openings ought to have shutters sliding in horizontal grooves with hooks in them, so as to admit of their being easily drawn back or pushed forward."

HOME DECORATION.

There is an innate sense of the beautiful in the human breast. The humblest, and even the most barbarous, classes of mankind are not insensible to the charm which attaches to beautiful objects. The beauty of a glowing sunset sky, the roseate hue of the coming sunrise, the bloom of flowers, the variegated tints of autumn leaves, the whiteness of immaculate snow, the harmonious blending of colors in a fine picture, and the expression of a pleasant thought in some tasteful and unique representation, have the power to please and charm, and thus add to human happiness. This love of the beautiful is a beneficent provision of Infinite Wisdom to contribute to the enjoyment of our lives, and its gratification should not be denied, when the means necessary to secure it are easily obtained.

FERNERY.

A man owes it to his family and to himself to make his home as attractive to them as his means will reasonably permit. Opportunities are often presented to persons of very limited means, whereby ornaments and objects may be procued, pleasing to the eye and charming to the sense, at very small cost. These things serve a double purpose; they are beautiful to look upon, and cultivate and develop the finer feelings in our natures. Their influence is elevating and refining, and they throw around one's home a charm that otherwise it could not possess. If more attention was paid to this matter there would be less of desire on the part of the boys and girls in many families to seek for enjoyment and recreation away from home.

There is very little excuse in these days for bare, hard, cheerless walls in the houses of those who are above the condition of penury and want. There are many beautiful objects which may be possessed at very small cost. Nature and art have placed many attractive objects within our reach with which we may beautify our homes. A great number of inexpensive ornaments may be made at home with little cost, many of which may also serve some useful purpose. And others may be purchased from time to time, as the means of the family will permit. The achievements of art have, within a comparatively late period, placed within the reach of all, many very attractive creations with which we may adorn our homes; and of these none are so popular as chromos. Fine paintings in oil are generally beyond the purses of those not blessed with liberal means, but the chromo places fac similes of such pictures within the reach of all. In no branch of the fine arts has the progress made of late, been of as much advantage to the masses of the people as in this particular line of labor, and that it is appreciated, and that there is a growing taste for art, is evidenced by the activity in this branch of trade.

A few years ago the homes of persons in humble or even moderate circumstances were devoid of pictures unless it was of cheap kinds. Now any one may possess beautiful creations of art scarcely inferior to oil paintings, of which they are *fac similes*. In some instances very beautiful chromos are given away as a premium with papers and periodicals, and have given general satisfaction, increasing the circulation of the papers adopting this plan, and placing thousands of chromos in the homes of families, who could not have obtained them at the prices then charged—thus a person could not only obtain a readable and useful family paper for a year at the regular subscription price, but he could possess also these beautiful pictures, so nearly like an oil painting that few could distinguish the difference between them. The manufacturers of chromos have shown a wonderful activity in the multiplication of subjects, so that we now have *fac similes* of nearly all the costly works of the old masters, and from our best and most popular modern painters. Some chromos are nothing but daubs and if you are not a judge of these matters, get some friend who is, to tell you a judge of these matters, get some friend who is, to tell you whether a picture is good or not. The same remark applies to oil paintings, and as these are far more expensive than other kinds, the more the necessity of knowing whether they are meritorious and worth the price asked for them. And engravings are subject to the same

rule. Some are fine, exquisite in point of artistic excellence, both in design and execution, while others are abominable from a lack of either or both of these requisites of a good engraving.

In regard to frames, let it be remembered that home-made frames, of grains, seed, pine cones, leather, &c., do very well for engravings but are hardly suitable for chromos. A suitable frame adds much to the effect produced by a fine picture. An artist understands this matter and never exhibits a fine picture in an inferior or shabby frame. Engravings may properly be put in rustic frames.

CORNER BRACKET.

Two or more brackets in a room surmounted by statuettes, or a pretty vase, of artistic design, or flower vases, add to the appearance and beauty of the room; and hanging baskets are graceful and attractive. These can be made without cost, out of materials at hand. A flower stand, an aquarium, wardian case, etc., can also be had at small cost. A great many nice ornaments costing scarcely anything except the time required in making them, can be supplied. Long winter evenings may be profitably employed in the production of such articles. In other portions of this work will be found instructions for making many articles such as are here referred to.

Hanging baskets and pots add greatly to the appearance of a room. One or more may hang in every window almost without reference to the sun for many plants suitable for this situation flourish without his direct rays. The exquisite blue lobelia is impatient of his beams. Smilax does well in sunless situations and is beautiful, but its deadly enemy the red spider must be kept from it. Pink oxalis is highly prized for hanging baskets and pots. The less common varieties of oxalis are desirable on account of size and color, but they require more attention, because they are more delicate and more liable to fail. The use of English ivies for decorating living rooms are becoming more general every year. They are vigorous, and will live under almost any treatment, but it is well to become familiar with their habits and peculiarities as a knowledge of these will enable any

HANGING BASKET.

one, with proper care, to have the most beautiful plants. The rooms in which they are placed should not be kept too warm, living rooms in the winter season are generally too hot for them; and for their occupants also. Neither plants nor people should have the average temperature over sixty-five degrees Fahrenheit. Your ivies may be enfeebled by undue heat and excessive watering. An unsightly entry and plain doors that lead to your parlor may be arched or curved like those in the drawing rooms of those who have wealth sufficient to gratify their taste. Get a couple of brackets, such as lamps for burning kerosene are sometimes placed on, and screw them on each of the door casings, put into each a pot of English ivy and train the plants over the top against the sides, or in any way that fancy may suggest. Rustic brackets are very appropriate for ivy against the wall; very pretty ones, one foot five inches high, may be had at from two dollars to two dollars and seventy-five cents.

SIDE BRACKET.

Brackets add much to the attractiveness of the home, as they become the receptacle of vases of flowers, natural or artificial, small plaster casts—that cost but a trifle and are pretty—and other little ornaments. The rustic brackets are deservedly popular, as they are very neat and attractive. Smaller and cheaper brackets can be made at home and almost any boy with a good knife and a key hole saw may find much amusement and satisfaction in cutting up old cigar boxes and fashioning them into these ornaments. Patterns of the various parts should first be cut from stiff brown paper, and trimmed till they fit each other exactly. If the brackets are quite small, they may be made of cigar boxes; if large, a pine or black walnut board may be used. Pine can be stained and varnished, and it is such an easy wood to work in that we recommend it to beginners in the bracket-making art. Lay the pattern cut from designs of your own on the wood, and mark it round with a pencil. With the knife, the saw, and the bit, remove all the wood to be taken away and scrape the edges smooth with a piece of glass. After the pieces are prepared they should be fastened together with glue and headless tacks, then stained and varnished. A little practice will give one more insight into the mysteries of the art than long written instructions.

The exquisitely beautiful and graceful plants known as ferns are household favorites. They may be applied very readily to household decoration for they are easily grown and require but little attention when once got into good order. Besides this, the interest attached to the study of growing plants usually repays the little expenditure of time and trouble involved in their cultivation. The three essential conditions necessary in order that the culture of fern plants may be successful are water, shade and shelter. Though some varieties will grow independent of some of these conditions, the observance of care in supplying all three, will ensure success in the cultivation of the whole species. The most important consideration, after putting the plants in place, is the supply of water. With this life-giving principle the roots of the plants should always be well supplied, and it should, on no account, be allowed to remain stagnant. The fern-stands and cases should be so constructed to admit of thorough drainage. Various styles of Ferneries can be obtained at prices ranging from three to twenty dollars according to size and style. But it is a mistake to suppose that a fern case need be of necessity either very elaborate or costly. An earthenware dish of the commonest description, and about four inches in depth covered with a shade of glass will constitute a case in which plants of rare beauty may be grown. Such a rude device may be employed until a better can be obtained. It will answer also for growing the plants in while they are small, to be transplanted into more presentable cases when they have arrived at good size.

WARDIAN CASE.

The Wardian case, as well as Ferneries, is now extensively used as a parlor ornament. It consists of a glass box set upon a stand or table made expressly for it. These are constructed in various styles, some being elaborate in design and costly in finish. One of the simplest forms is this: Take a common cheap table, say four feet long and two wide; remove the top boards and board the bottom with them tightly. Thus a box is formed like a sink; line this

FERNERY.

with zinc. The top may be made of window glass; it should be about two and a half feet high. In one end there must be a door of good size, and the box must have an aperture for drainage. The case is now to be filled with soil. Place a flower-pot saucer over the hole, which would otherwise be entirely closed. Over the bottom of the box, spread a layer of charcoal, broken pot-shreds an inch in depth. On this place soil, filling the box with it. The soil should be mixed, and of the following proportions: two parts fresh earth from the woods so that it contains a goodly quantity of leaf mould; one part clean sand and one part meadow soil taken from just below the turf. A little charcoal-dust will be an advantage.

With a case of this size a succession of flowers may be had during the whole winter. What flowers are the best to put into it depends upon circumstances. The safest way to determine this matter is to consult a professional florist.

In another part of The Home Guide may be found information about flowers which will suggest the kinds of plants and flowers that are best adapted for this purpose.

Flower stands made of wood, either plain or in rustic work artistically made, are very pretty. But if plain and nicely painted they answer very well the purpose for which they are intended. Those of wood are preferable to wire for they have, like the Wardian case, a box into which the pots containing the plants may be imbedded in sand. Let the earthen pots containing the plants be of uniform size, and after arranging them as you desire in the box of the flower stand, fill up the spaces around them with sand; then spread moss over the top of the sand so as to conceal the pots. It will be necessary to renew the moss occasionally during the winter. Keep the sand damp, but not too wet, and take care not to keep the temperature of the room too hot.

Autumn leaves, ornamental grasses, everlasting flowers, make beautiful ornaments for home decoration. These may be obtained both in their natural and prepared state, made up in boquets, baskets, wreaths, crosses, &c. Many persons, however, are so situated that they can procure them without buying them of a florist. A ramble in the woods in October, armed with a couple of pruning-knives, will enable one to possess leaves in great variety both in kind and color with which to make pretty ornaments. One of the knives should be attached to a light stout pole, in order to secure branches and sprays beyond the reach of the hand. A boquet of these leaves, artistically arranged can be made to depend from a rustic bracket or basket or be festooned about a trellis or standard.

Appropriate articles for ornamentation are objects of natural history. Small collections of shells, minerals, insects and corals, displayed in a cabinet, or on a pedestal consisting of a number of wooden circles raised one above another like steps, are attractive and interesting. The steps are constructed of wood and covered with black velvet. To display shells to advantage lay pink wadding on the edges to conceal the black velvet; this is for white shells; for colored shells use white wadding. Either arrange the white shells on a ledge by themselves, or give them squares of pink wadding. The circular pyramid will thus resemble ascents of black velvet and ledges of white or pink wadding adorned with shells. Write the name of each shell neatly on a label and with gum fix it to the ascent behind the shell. For minerals, cover the pyramid with crimson velvet and alternate ledges with white cloth. The sides of the wooden pyramid may be covered with straight strips of velvet wide enough to turn down over the ledge top and bottom; and the edges are niched out to make them lie flat. The cloth or velvet to cover the ledge is to cut the right size in a hollow circle, and glued on its place. White shows up the colors of the minerals to good advantage. For insects and butterflies the arrangement with white is best. It is desirable to attach, on a piece of paper, to each specimen, its name. When covered and finished, nail the pyramid to the stand. A glass shade should be placed over the collection to keep it in good condition. Cases of this description — formed of shells, insects, minerals and corals, — not only make handsome ornaments in your apartments but entertain, and help to form the tastes of the children of the house, as well as adults, directing their thoughts in healthful and instructive channels. Reared among such ornaments children are apt to be curious as to their nature, and by asking questions enable us to convey information of real utility and to elevate and educate their tastes.

Wax flowers are deservedly popular as room ornaments; and they may be made at home, but time, patience, and skill are required to learn the art. When it is acquired there are few light home occupations that afford more satisfaction than making these, the best imitation of real flowers.

Home ornaments may be multiplied without number by the various members of the household, and particularly by the female portion of it. Leather-work, wax-work, window pictures, lamp screens, etc.,

etc., can be produced from time to time, and with but little expense, all of which add to the grace and beauty of our rooms.

The wives and daughters of men who are not blessed with much of worldly goods are mistaken in the opinion that none but the wealthy can afford the luxury of decorating their homes. It may be thought that when the *real wants* of the family are barely supplied it is useless to covet pictures fancy articles, such as flowers, baskets, ottomans, rugs, tidies, etc. A lady who has thought upon this matter and wrought many pretty things, and written about them says pertinently, "Picture frames do not cost much, it is true, and a picture does add so much to the appearance of a room; but a hundred little wolves of necessity stare us in the face when we seriously contemplate the extravagance of buying one. Now to me, these, termed by some unnecessary knicknacks, and woman's fol-de-rol, are indispensable to comfort. They furnish food for the mind, and are a play for skillful fingers, which can almost create out of otherwise valueless materials, really beautiful articles which it would cost considerable money to buy. There are times and whole seasons together, when it is simply impossible for a poor mother, half distracted with family cares, with so little to do with, and yet so much to do, to find time for fancy work of any kind. But it is not always so. An evening out of every week devoted to that purpose will not be much missed, and in that time a great deal can be accomplished."

THE CLOTHING WE WEAR.

Need it be said that upon the manner in which we clothe our bodies, the health we enjoy, largely depends? There is no question that very much of our success in life depends upon neatness and good taste in dress. We vary our clothing with the season and thereby secure warmth in winter and coolness in summer; and our clothes serve a useful purpose in frequently protecting our bodies from accident, and keeping us cleanly. If the climate we live in permitted us to array ourselves only in "the brief costume our first parents wore," the additional exposed surface would require as frequent washing as is now necessary for the face and hands; but in the latitudes of the northern hemisphere, or the most of them, warm clothing is necessary the greatest portion of the year, to protect the body from cold.

Professor Nichols, in his "Fireside Science," (from which we have previously made some valuable extracts) says upon this subject. "Clothing is composed of a variety of materials, and these are used in reference to their influence upon the body. Cotton and linen are cooler than wool or silk, and consequently in this climate we prefer the latter in winter and the former in summer. The former are bad conductors of heat, but the animal products, the wool and the silk, are much worse. Clothing serves the same purpose for the body as coverings of wool or hair felting do for steam or hot air pipes, namely, to keep in the heat, or prevent loss by radiation. The worse conductor any substance may be, the warmer it will prove as clothing. Linen jackets and muslin dresses take the place of cloth overcoats and thick shawls in summer, because they are better heat conductors than the heavy woolen garments. In winter we desire to retain as much animal heat as possible, and so we don the very imperfect conducting substances of wool and silk.

"The color of clothing is by no means a matter of indifference. White and light-colored clothes reflect the heat, while black and dark colored ones absorb it. White is the comfortable and fashionable color for clothing in summer. It reflects heat well, and prevents the sun's rays from passing through and heating the body. If white is the best color for summer, it does not follow that black is the best for winter. It must be remembered that black radiates heat with great rapidity. Give a coat of white paint to a black steam radiator, which is capable of rendering a room comfortably warm at all times, and the temperature will fall at once, though the heat-producing agency remain the same as before. A black garment robs the body of a larger amount of heat than white, and consequently the latter color is the best for winter garments. It is the best color for both summer and winter. Although this statement may seem like blowing hot and cold, it is nevertheless true. Let those who are troubled with cold feet, and who wear dark socks, change to white, and see if the difficulty is not in part or wholly removed. Utility in color is confined to the different shades merging from dark into light; but we find in connection with dress all the beautiful tints of the rainbow, and these are used for the ornamentation of the person. The rich and varied colors which are so extensively worn are by no means to be condemned; adornment of the person to a reasonable extent is commendable. We all love the beautiful in nature, and what adds so much to the attractiveness of woman as the ribbons and scarfs, stained with magenta, mauve, or solferino, which adorn her person? Deep in the instincts of our nature is laid the admiration of color; and we love beautiful flowers and birds and — beautifully dressed ladies.

"The abuses in dress must not pass unnoticed. The tight waist, the low necks to dresses, and the high-heeled shoes are most flagrant abuses, and ought not to be longer tolerated. We shall not quarrel with the little jaunty hats of the ladies; for they are indeed pretty, and no harm results from them, as of all parts of the body the head needs the least clothing. But, to pass to the other extremity, we have to say that the detestable high heels to ladies' boots and shoes, running as they do down almost to a point, are spoiling the gait and ruining the ankle-joints of children and young misses. We are careful to order our shoemakers to remove such heels from shoes before permitting them to be brought into our dwelling. Heels of moderate height and good breadth are of great service in elevating the feet, so as to avoid direct contact with moist earth, and they also give support and afford firmness to the step. Why should fashion push good devices to absurd extremes? We must aid in dethroning the tyrant when her decrees lead to the physical or moral injury of the race. The common fashion of leaving the neck and the upper part of the chest bare, is fraught with evil consequences. It would be less objectionable in countries uniformly warm; but that our daughters, here in this frigid and changeable climate, should constantly expose to chilling winds a vital part of the body, is one of the evils of fashion which should be discountenanced by every mother, and father, and brother.

"No part of the dress of men is really more absurd than the hard 'stove-pipe' hat so generally worn; and yet all attempts to subvert it have proved abortive. For thirty years we have worn this kind of head covering, and we like it better than any other; we have tried hard to like the low, soft hats, but we cannot; and this is the experience of thousands. Absurd as the high, hard hat is, it does keep the head more comfortable, it does maintain a more equable temperature, it does feel better, than any other form of head covering; and so let us continue to knock them against beams in attics and the branches of trees. If they serve a good purpose in brushing cobwebs from the roofs of old garrets and stables, they also protect us from bad bumps, and keep our heads comfortable."

There are some plain, common sense principles that apply to art in dress which all should, and may, understand, and which should never be forgotten, whatever the prevailing *mode* may be. Some one has said, and with truth, that to one who has a quick eye for what is appropriate for individuals in matters of dress, the violations of taste often met with are more than disagreeable — they are ghastly. Why, if a woman has a neck like a skeleton, must she tell the world so? Why, if fate has made her grow stouter than it is permitted to be, must she squeeze and fold her fat into a tight, low dress because it is the fashion? Why must she draw a hard line around her shoulders, that seems to cut her in two, and wear sleeves which are mere straps to keep her gown on, without caring, without knowing, whether her arms are models? Why must she wear trimmings of great O's and X's and vandykes on her skirt, so that at a little distance the first thing about her that strikes the eye is the trimming? Why, if very tall, must she take the arm of a very little man, and make herself and him look absurd? Why will she draw attention to her want of color by wearing red or arsenic green? Why, with red hair, is her dress pink? Why, when in a pale dress, does she lean against the wall, which the barbarity of custom has papered with white? Why, with black hair, does she carry a heavy burden of jet flowers, combs, and impossibly thick plaits that make her head look like an elephant's or an antelope's body? Why will she trust to the very moderate gifts nature has endowed her with, to fight against the most abnormal disadvantages? These are only some of the insane mistakes that nearly all girls commit, many of them girls with artistic tastes and capacities, in every direction except dress, whose eyes you may see shine with pleasure at a sunset or a bean-flower — which, nevertheless, they steadily refuse to take a hint from.

Very few women know what style of dress suits them best, or what colors; even those who study the art study it wrongly. One may often see a woman who has the makings of a dignified goddess appear like a coquette, or a little creature attempt to be stately who can only be simple. The best grace is perfect naturalness. Our manners form themselves, but we must form our setting of them. Nature can do much, but not everything. Art should do something. You must choose suitable colors and suitable shapes for your dresses. A low neck always lessens the height, and a dark dress made thus lessens it still more, and it strikes the artistic eye as cutting the body in pieces, in this way. If you see a fair person dressed in a low dark dress, standing against a light background some way off, the effect will be that of an empty dress hung up, the face, neck and arms being scarcely discernible. On the other hand, against a dark background the head and bust will be thrown up sharply, and the whole dress and body will disappear. This effect, often enough seen, is execrably bad.

If you must wear a low black dress, let it be cut square, giving the height of the shoulders (or better the angles rounded, for corners are very trying) and have plenty of white or pale gauze, or thin black net, to soften the harsh line between the skin and the dress. White gauze or lace softens down the blackness of the dress at the edge of the bodice, and thin black stuff has an equally good effect, as it shades the whiteness of the skin into the dark color of the gown. Only under these conditions does the sudden contrast enhance, as some persons suppose, the fairness of the complexion. Nature abhors sharp edges. We see contrasts in flowers and in marbles; but they are always softened, each color stealing a little of the other at the juncture of the two. Even the sharp edges of a crag or house against the sky are seen by a practiced eye to gather some softening grayness either from the surrounding colors or by mere perspective. Trees grow thin at the edges and melt into the sky; in a prism, of course, we see the tender amalgamations of hues more distinctly, the secondaries lying clearly between the primaries. Ruskin had noticed this surely when he said, " All good color is gradated," each mixed into the next where they are contrasts.

How much of disease and death results from the insufficient of injudicious clothing of the body, it is not possible to determine, but there is no doubt that the annual bills of mortality are frightfully augmented from this cause. Coughs, colds, and disease in numberless forms, arise from being thinly clad in severe weather, and going from hot rooms into a cold atmosphere; with warm clothing the danger is not only not so great, but is rendered nearly impossible. No one, however, should go into a cold, crisp air while in a state of perspiration however warmly clad he may be. With sufficiently warm garments in winter weather, and the exercise of ordinary prudence, very much of the sickness so generally prevalent in winter weather, may be avoided.

The absurd, cruel and criminal practice of exposing the arms and limbs of children, no matter what season of the year it may be, at the behest of fashion, carries thousands of them to the grave every year. It is the slaughter of the innocents, and the wonder is that mothers can be found who will run the risk of thus compassing the death of their offspring. A distinguished Paris physician said, not long ago, he believed that during the twenty years he had practiced his profession twenty thousand children had been carried to the cemeteries, a sacrifice to the absurd custom of exposing their arms. Put the bulb of a thermometer into a baby's mouth and the mercury rises to ninety degrees. Now carry it to the little hand; if the arms are bare and a little cool, the mercury will sink to sixty degrees. Of course all the blood that flows through these arms must fall from ten to forty degrees below the temperature of the heart. When these currents of the blood flow back to the chest, the child's vitality must be more or less compromised. It is not surprising that diseases of the lungs, throat and tongue are the result.

The following maxims by Dr. Hall of the *Journal of Health*, should be remembered.

"It is very unsafe to lessen the amount of clothing sooner than the first of May, and then not in quality, but in less thickness of the same material; from yarn socks to worsted; from a thick, knitted flannel shirt to one of common woollen flannel; then about the first of June, to a gauze flannel; if this is oppressive to some, then employ canton flannel. But it is certainly a great mistake for anybody to wear anything else next the skin, even in the hottest summer weather, than woolen flannel.

"A consumptive man is one who has already lost the use of a part of his lungs — the more need, then, is there that the air which he does consume should be the purest possible.

"Speaking of changing the clothing, we consider it hazardous to lessen its amount after dressing in the morning, unless active exercise is taken immediately. No under-garment should be changed for lighter ones during the day ordinarily. The best, safest, and most convenient time for lessening the clothing is in the morning, when we first dress for the day.

"All garments worn next the skin during the day should be removed at night, and spread out for thorough airing and drying.

"A partial wetting of a garment is more apt to induce an attack of rheumatism, than if the entire clothing were wetted; because in the latter case, it would be certainly and speedily exchanged for dry garments. The very moment a garment is wetted in whole or in part, change it or keep in motion sufficient to maintain a very slight perspiration, until the clothing is perfectly dried.

"Many a man and woman owe an untimely death to damp feet in winter time. This is very generously admitted, and many methods have been proposed to prevent it. In wet weather, or when the snow is melting, the India-rubber shoe is most perfect article offered; some prejudice has been excited against them, more than anything else from the unwise use of them. They may be hurtful to some, but it does not follow that they are generally so. No one can be comfortable with cold, damp feet, and the very instant it is noticed, the person should begin to walk, or remove both stockings, and hold the bare feet to the fire until they are perfectly dried and feel comfortably warm. India-rubber overshoes should be worn only when the person is walking; as soon as the walk is ended they should be removed. They certainly ought not to remain on the feet ten minutes if the person is standing still in the house after a walk.

"Children should be kept as warmly clad, at least until May, as in the depth of winter; they should not be allowed to remain out ot doors later than sundown, when they should be brought into a warm room, their feet examined, and made dry and warm, their suppers given them, and then sent to bed, not to go outside the doors until next morning after breakfast.

"A person should sleep in one garment, a coarse cotton shirt, and no more, without a button, or pin, or string about him. No one, who pretends to common cleanliness, should sleep in a garment worn during the day, nor wear during the day a garment in which he has slept. Any garment worn should have six or eight hours' airing every twenty-four hours.

"The less you wear at night, the more good will your clothing do you in the daytime. Those who wear a great deal of clothing at night must wear that much more in the day, or they will feel chilly all the time; and our own observation teaches us that the people who muffle up most are the most to complain of taking cold. But why wear flannel next to the skin, in preference to silk or cotton? Because it is warmer; it conveys heat away from the body less rapidly; does it so slowly, that it is called a non-conductor it feels less cold when we touch it to the skin than silk or cotton. If the three are wetted, the flannel feels less cold at the first touch, and gets warm sooner than silk or cotton, and does not cling to the skin when damp as much as they do."

As a rule a very large amount — in fact the great bulk — of the wearing apparel of the family, is made at home. The sewing machine has made it possible for the female portion of the household to make most of the clothing required, so that material, patterns, skill and time are only necessary to supply the wants of the family in this direction.

No prudent housewife neglects the care of the wearing apparel of her family. There are those burdened with a multiplicity of cares and labors who find it difficult sometimes to attend promptly to the demands every week which arise from wear and accident to the family wardrobe, but where the work is reduced to system, time will be found to keep clothing in order. The axiom "a stitch in time saves nine," is not less true than trite, and it contains a valuable idea also of economy, as every one must know.

It always pays to buy good goods for clothing. Some kinds of goods look well, appear thick and heavy, but they are often very inferior in quality. Cotton and linen goods are often filled with starch or some other substance to give them a heavy appearance, and these substances disappear when the goods are washed showing its flimsiness. Cloth and silk are often loaded with dyes or made of inferior materials and lead one astray as to the real quality of the goods. In another part of the Home Guide useful suggestions and hints are given which indicate how to select textile fabrics.

THE SKIN AND ITS MANAGEMENT.

A healthy state of the exterior of the person has much to do with the health of the whole human body. Cleanliness is next to godliness, says the great Apostle. Certain it is at all events, that much of personal discomfort as well as disease is prevented by the proper management of the skin. An article on "The Toilette" from an English work issued by Cassell, has the following, which contains in brief space, much valuable information. Upon the structure and management of the skin the writer says:

"A few words may suffice to describe the skin, and they are necessary for the simple reason that it it is manifestly imperative to know the construction and properties of an organ, in order that we may appreciate how best to use it, to preserve its proper functions from irregularities, and to prevent the action upon it of injurious influences. The skin is a soft membrane composed of cuticle or scarf-skin — the part which is raised on the application of a blister — made up of small cells flattened together, and of the true skin, or *derma* beneath whose structure is that of a mass of fibres arranged in network fashion, projecting at the upper part into little finger-like processes, called papillæ, which we see through the cuticle on looking at any part of the skin. The true skin is furnished with blood-vessels, called capillaries, which form a horizontal layer, and send off-shoots into the papillæ. The nerves are distributed like the blood-vessels. Besides these elements, the whole thickness of the skin is perforated by the ducts of the little sweat glands and by the hair follicles, into each of which two little fat glands open by their proper ducts. The scarf-skin does not block up the openings of these ducts, but opens down and lines their interior. The cells of which it is composed are constantly shed as scurf, and it is the tardiness of this shedding which blocks up the pores of the skin. The little glands secrete a fatty matter, which also tends to choke the pores of the skin; the action of soap is to soften up and remove this fatty matter. The true skin or derma is that part which is made into leather. The little projections of papillæ each contain a nerve twig, and are in fact the 'feelers' or sensitive organs of the skin — the parts which constitute the organs of touch. Beneath the skin is a layer of fat, which forms an admirable 'cushion,' breaks the force of blows, and allows the movements of the skin to take place freely. The little sweat glands are tubes which open on the exterior, and run down in a spiral direction, till they end in a little coil, surrounded by blood-vessels, from whence the fluid sweat is derived. Now it is very important to be aware of the number and length of sweat-tubes. There are nearly three millions of these tubes in the body, and it is calculated that they are in all twenty-eight miles in length. It will be at once evident how important it is to keep the pores of the skin open, in order that the body may be properly purified by allowing these sweat glands and tubes to perform their functions properly. This may suffice for the structure. Then what useful purpose does the skin serve? What are its functions? In the first place it is the organ of sensibility; secondly, it is a protection to the body; thirdly, it is a great breathing organ, really an extensive lung. The dark and impure blood circulating through its veins becomes changed by the action of the oxygen of the air, and fitted to nourish the tissues more perfectly. Hence the need of keeping the 'pores of the skin open' by proper washing. The importance of the breathing function of the skin can be easily shown by experiment, for if we varnish over the skin the subject so varnished often dies of what is nothing more nor less than suffocation. Insects breathe entirely through their skin. The skin does about one-thirtieth of the work similar to that performed by the lungs, and in disease of the latter it is very likely much more active in purifying the blood. Then, fourthly, the skin carries off by the sweat much solid matter, that would be, if retained in the body, very injurious. Under ordinary circumstances about a pound and a half of sweat is given off by a man in a day. The body is also kept at a proper temperature by the evaporation of the sweat; hence the importance of keeping the skin in order, especially in cleanliness, in order that nature may regulate the heat of the body. Inattention to these points gives rise to various disorders of the system, especially colds, coughs, and the like. The fluid which is sweated out of the body comes from the blood-vessels in the deeper part of the skin. A word more about the work of the little fatty glands, and this part of the subject may be left. These little structures give exit to fatty matter; that by inducing a slightly greasy state of skin, prevents too great evaporation; it acts as a protection to the skin against irritants, and it also carries off certain fatty acids from the body. In an inactive skin these glands get choked up by the retained fatty matter, and we then have pimples, as about the face.

"*To keep the Skin in Health.*—It is necessary that it be properly nourished, that all things that will irritate it be avoided, that it be kept in a proper state of warmth, and above all things that the utmost and constant cleanliness be observed. Now in the first place with regard to the influence of food on the health of the skin, it may simply be said that in proportion as plain food is regularly taken will the skin be preserved in health in common with other parts of the body. The skin of infants is very liable to get out of order when the milk they take is poor; and it is very important that mothers should attend to this matter, and see that the milk they give infants is really good; or if the natural food which their babies get from them is poor, that means be taken to improve the supply. Fair mothers of fair children should be particular in this respect. If parent or child be weakly, then it may be advisable to give a special meal to a child—say between three or four months of age—of milk with a little water, perhaps thickened with bread, jelly, or a little fine baked flour. A child at seven or eight months should be taking two pints of milk a day; and after the teeth are shown, broths and the like may be taken. By such a plan as this there is the best chance of keeping the skin of infants firm and healthy, so far as diet is concerned.

The growing girl or boy of five, seven, or eleven years of age, requires a full supply of meat, otherwise the skin is liable to be deranged, and such abominations as scald head, ringworm and the like are likely to show themselves. Such young persons as are here indicated require enough food not only to repair the ordinary wear and tear of their bodies, but to provide for the actual increase in growth from day to day. The dietary of schools should be much improved. The following is a capital meal chart, we believe suggested by Soyer, for those in charge of boys and girls:—'Bread and milk at eight dinner at one: roast mutton and apple pudding; roast beef and currant pudding; boiled mutton with turnips, after rice or vermicelli pudding; occasionally a little salt beef with suet dumplings, plain or with currants in them, or pease pudding;' and to these we should add bread and butter and milk and water for tea, and a fair meal of bread and cheese or butter for supper. In the case of those youngsters who look under-fed, a piece of meat at night and a glass of beer or milk in the day time should be added. There is one other point in reference to young persons worth notice.

It is the importance of eating a certain amount of fat with the food. Children who have unhealthy skins are often those who seem to avoid eating fat. This is a point which parents would do well to notice. Fat is a very influential item in the food as regards the skin, and if it cannot be taken in the ordinary way, it is just a question whether it should not be given in an artificial form, by way of cod-liver oil, which has great effect for good on the skin. The dose for a child of a year old is ten to twenty drops; for those of five, half a teaspoonful. With regard to adults, the guide to what is best to be taken for the good of the skin, is the effect of food upon the stomach. If there be any article which in being taken does not sit lightly upon the stomach, or flushes the face, that should be avoided, for its use will very likely lead to the development of pimples and red blotches. It has been said that tea and coffee act injuriously upon the skin. There is no foundation for this opinion, but it is certain that a very close sympathy exists between the face and the stomach, and when there is a feeling of heat, or the appearance of a red flush after taking beer or wine, or any particular article of diet, in young persons, we may expect the face to become disordered, and blotches and pimples to appear."

The skin and bathing is the subject of one of Dr. J. R. Nichols essays in this work entitled "Fireside Science". The importance of bathing is shown so vividly therein that the following extracts from it are here inserted:

"Physiologically considered, it would seem almost impossible to over-estimate the importance of the functions of the skin. Consider for a moment the complex apparatus by which these functions are carried on, and the enormous amount of work accomplished through it. If the reader will examine his hand with a simple jeweller's lens, or with any of the cheap pocket microscopes, he will notice that there are delicate grooves crossing the furrows, and that a small orifice exists in the centre of each of them. Some of these orifices occupy nearly the whole of the groove, and are the openings of the perspiratory ducts, from which may be seen to issue, when the hand is warm, minute shining dots of perspiratory matter.

"But perspiration is not held in the body as water is held in a sponge, which can be squeezed out by pressure or by throwing it about; neither does it exist ready formed within us, as are the juices in apples and oranges. Upon the under surface of the true skin there are a multitude of little cavities, and in them are minute glands, which resemble ravelled tubes, formed of basement membrane and epithelial scales, with true secreting surfaces. It is the work of these little organs to receive the impure blood which is constantly brought to them through a network of arteries, and purify it; and to thrust out of the system the waste or offensive matter which is separated from it. These impurities come along in the blood, and are cast out through the perspiratory ducts while dissolved in that medium. After the blood is thus cleansed, another set of vessels are ready at hand to carry it back into the interior of the body, to become again and again loaded with impurities, which the little glands are tireless in extracting and removing. What organs in the human body subserve higher or more vital purposes than these? Does the liver or the stomach, or do the kidneys and the lungs, stand in more intimate relations with life than these little glands? We think not. Their size varies in different parts of the body. In the palm of the hand they are from 1-1000th to 1-2000th of an inch in diameter, while in the arm-pits they are 1-60th of an inch. The length of the tube which constitutes both gland and duct, is about a quarter of an inch, and the diameter is about 1-1700th of an inch. It is a curious fact that the ducts, while traversing the true skin, are perfectly straight; but as soon as they enter the tough scarf-skin, they become spiral, and resemble a cork-screw, so that the perspiration is propelled around the tube several times before it is ejected. * * * *

"The amount of liquid matter which passes through these microscopical tubes in twenty-four hours, in an adult person of sound health, is about sixteen fluid ounces, or one pint. One ounce of the sixteen is solid matter, made up of organic and inorganic substances, which, if allowed to remain in the system, for even a brief space of time, would cause death. The rest is water. Beside the water and solid matter, a large amount of carbonic acid, a gaseous body passes through the tubes; so we cannot fail to understand that they are active workers, and also we can not fail to see the importance of keeping them in perfect working order, removing obstructions by frequent application of water, or by some other means. Suppose we obstruct the functions of the skin perfectly, by varnishing a person completely with a compound impervious to moisture. How long will he live? Not over six hours.

"If from any cause the orifices of the perspiratory ducts become partially obstructed or closed, the whole system suffers the most serious derangements. Those important secretory organs, the liver and kidneys become greatly embarrassed with additional burdens thrown upon them, and a general feverishness pervades the body. This is disease, and the cause of it must be removed, either by bathing the entire surface with water, or by exciting the little glands to unusual activity so as to force a passage through the obstructions. If one pint of liquid material, containing one ounce of solid *excreta*, is thrown out upon the surface of the body and into the clothing every day, it is evident that some care is needed to keep the body clean and the ducts in working condition. In civilized society, this need is recognized, and frequent bathing is resorted to by large numbers of both sexes. The question, 'How often should the body of a person in health be bathed?' is an important one, and great difference of opinion exists with regard to it. There is no doubt, however, that bathing, like all other good things, may be abused, and the good we seek from it changed into evil. Many people have been injured by too frequent bathing. As a rule, we regard once a week as often enough for all purposes of cleanliness in persons of sedentary habits, and once in two weeks for those who are engaged in more active in-door pursuits. For those who are at work in the open air, like farmers and some mechanics, the health does not seem to suffer if bathing is resorted to only at quite long intervals, or not oftener than once or twice during the year. A frequent change of the inner garments is of the highest consequence to all persons, and also the thorough airing and changing of bed-clothing. Consider in the light of the facts we have stated, how uncleanly and injurious is the habit of wearing flannels or under-clothing for several consecutive weeks without washing, as very many do. Seven pints of impure liquid, in the form ot vapor, pass into the clothing every week from the skin, and half a pound of solid matter accompanies it. Much of this become entangled in the fabric, and remains there a source of impurity, until removed by the labors of the laundress."

ORNAMENTING HOME GROUNDS.

In a vast number of instances in this country, it is within the power of the owners of rural and suburban homes to make their surroundings highly attractive; but that there is great neglect in this matter, hundreds and thousands of homes furnish the strongest evidence.

That trees are essential to civilization is a fact which will not be disputed. Without them man cannot advance beyond the rudest forms of pastoral life. Their value to the human race, for practical purposes, is beyond computation. But it is from an æsthetic point of view, that their utility is considered in this connection. And here, before taking up specifically the topics to be considered, the subjoined extracts from a valuable work on "Landscape Architecture," by H. W. S. Cleveland, of Chicago, are especially applicable:

"Inexperienced persons continually deceive themselves with the idea that no art is required in the arrangement of ground for the ordinary purposes of domestic use as a family residence, beyond the exercise of intuitive skill and ingenuity, and almost every man imagines, till he tries, that he can do it to suit himself much better than another can do it for him, and many a one pays dearly for the experience which convinces him of his error.

"In selecting a building site; in arranging the relative positions of the buildings to each other, and to the objects for which they are designed; in making such disposition of the different departments as will best facilitate the convenient and economical performance of the objects of use or pleasure to which they are devoted, taking advantage of natural features whenever they are available to save otherwise unavoidable outlay; having due regard to necessities of drainage, or other possible provision for health or comfort, to say nothing of possible future wants to which reference should be had, many problems are involved, the satisfactory solution of which demands the discipline of study and experience. Objects of utility or convenience may often be secured by availing one's self of natural advantages, which it would require a large outlay to attain by artificial means. Present or future wants may occur to the mind of one who has had the advantage of experience which might not suggest themselves to a novice, and a professional man might find means of providing for such wants which an experienced person would never think of. All these things are comprised in the essential duties of the landscape architect, independently of the artistic skill which enables him to preserve a unity of design throughout, and thus to give an expression of grace and beauty to the whole by the harmonious blending of its parts. The point I wish especially to impress upon the reader is that this primary work is what really confers character upon the place. Decorations of whatever kind may be subsequently added, and if tastefully and appropriately introduced, may tend to heighten the effect, or increase the attractive interest which pertains to the whole, but in no case can they render a place beautiful which is not intrinsically so, or atone for awkwardness, inconvenience or incongruity in the general arrangement, and moreover it is by no means impossible that elaborate ornamentation should destroy or seriously detract from the general expression otherwise conveyed, as for instance by conferring an air of ostentatious display upon an otherwise pleasant and attractive home, or detracting from the dignity of an imposing situation, by diverting the attention from the sublime or beautiful natural features, which are sufficient in themselves to excite admiration and occupy the attention.

"In selecting the position for a house, which is to become a family homestead, on an estate comprising the usual variety of rural scenery in the form of hills, valleys, wood, water, etc., either within or immediately adjacent to its own limits, it should be remembered that the immediate wants of its first occupants comprise but a single link in the chain of circumstances which should be taken into consideration before making the final decision. The building about to be erected may outlast several generations of occupants, and it would prove a source of constant annoyance to discover when too late, that an error had been made in its position, involving disagreeable consequences which might have been avoided, or failing to secure advantages which another situation would have afforded.

"Such mistakes are very common, and a consideration of some of the questions involved will show that the probability of their occurence is very great.

"If any considerable elevation, commanding an extended prospect, is included in the area, the first impulse of an inexperienced person will be to select the summit as the most desirable site for the residence. The importance of securing such a view from the windows, as conducive to the happiness of the daily life of the occupants is apt to be over-rated in the enthusiasm excited by its first contemplation. Most people become indifferent to it, when its novelty is destroyed by daily habit, whereas the annoyances attending the access to an elevated position, which at first seemed a cheap price for the treasure to be secured, are never diminished by repetition The necessity of climbing the hill at every return to the house, in all conditions of weather, through rain and sleet, and icy winds and broiling sun; whatever the condition of roads, mud or dust, ice or slush; under all circumstances of health and temper; suffering with a headache which makes life a burden; harassed with petty vexations, or hurried by unexpected necessities which no man escapes, renders it after a time so serious an evil that only the utter hopelessness of relief constrains the sufferers to submit in silence.

"Better by far to select a less commanding position for the house, reserving the summit as an objective point for an evening stroll, when weather and disposition are favorable, under which circumstances the extended view will never fail to be appreciated and enjoyed. As a matter of taste also in securing the most agreeable aspect of the place from points of approach, the summit of a hill should be avoided as a building site, since a house thus situated has always a bleak, exposed look, especially if seen in whole or partial relief against the sky, whereas if the land rises in the rear of the house, the summit crowned with wood, and in front assumes the form of a gently sloping lawn, with groups of trees tastefully arranged to prevent the appearance of bareness, the effect will be to give a home-like and attractive expression, which every person of good taste will recognize with pleasure.

"It is moreover not unfrequently the case that more attractive though less expansive views can be obtained from the lower point, by arranging plantations of trees or shrubbery so as to conceal offensive objects, and direct the eye to graceful or picturesque bits of landscape which are varied as the position is changed, and thus rendered more interesting than when seen in the single prospect from the summit which embraces them all.

"It is not improbable that other and more serious objections may be urged against the supposed site than have yet been stated. The importance of reserving abundant room in the rear of the house for domestic convenience and pleasure, secluded from public sight, can hardly be over-estimated as an element of daily comfort, and if in order to secure the fine view, the house is placed upon the apex of a hill,— the ground sloping to the road in front so as to be fully exposed to view, and falling off in the rear also, so rapidly as to leave no room for domestic offices, wood yard, laundry yard, play ground, garden, etc., shut out from public gaze and amply large for all the demands of the family — the continual sense of discomfort and inconvenience resulting from the want will far outbalance the advantages gained. The position of the stable, both as regards its own requirements and in reference to the house, is a matter of essential importance. It should be convenient of access, yet not so near as to be in any way offensive; not prominently conspicuous, though I do not consider it an objectionable feature if unobtrusive, and it is all important that it should be capable of approach by a farm lane, instead of being solely accessible by the carriage drive past the front door. Advantage may often be taken of a side hill to economize construction by means of a basement in which the cow stalls may be constructed, with a large sliding door opening on the barn yard at a lower level than the stable and carriage house, and thus out of sight from the house. Much of the essential interest and pleasure derivable from whatever attractions the place may possess, is dependent upon so placing the house that the windows of the rooms which will be most occupied may command the most desirable views, and to this end it is of vital importance that the architect and the landscape gardener should act in concert, otherwise the portions of the grounds which possess the best capacity of tasteful development may be overlooked by the kitchen windows, while the parlors may command only a cheerless outlook upon the road. Architects would no doubt be more ready to join in consultation with landscape gardeners, if the latter were, as a class, more conscious of the duties and responsibilities of their profession, and better able to fulfil them. The question of an easy and graceful entrance drive by which the house may be approached from the road, and easy access to the stable must of course be taken into consideration in determining their relative positions, and also the subdivision of the land into useful and ornamental departments, of garden, orchard, lawn, wood, etc. And finally, the arrangement of the plantations of trees and shrubbery requires the exercise of a degree of skill and taste which are never attained without study and experience. It is generally at this stage that the proprietor becomes conscious of his own deficiency and seeks the aid of a landscape gardener.

"Tree planting is the first positive step in the work of redemption from the cheerless condition to which the place has been reduced, and if the owner has attained a conception of the possibility of a more graceful arrangement than that of formal rows and attempts the arrangement of groups and irregular belts, he speedily becomes aware that he is going beyond his depth, and is fain to call for aid. He cannot satisfy himself in regard to their positions, and is utterly at loss when he tries to imagine what will be the effect when they have attained their full size. Of their relative size, form and color of foliage he has probably no idea, and if he attempts to stake out the ground for the planting of a group, it is probable that he will set the stakes within five or six feet of each other, and label them with the names of such trees as he has bought of a travelling agent, who has assured him of their desirable characteristics. He soon becomes sensible of a perverse tendency of the stakes, in spite of every effort on his part, to assume a formal character in their positive relations, which is inexplicable. His determination was to stick them in as irregularly as possible, and he finds on looking them over that he can see squares, and triangles, and straight rows and quincunx figures continually repeated. And perhaps in the midst of his work he happens to cast his eye into an adjoining meadow upon an elm which has been growing in undisturbed beauty for a century, and the thought flits across his mind that he has been for an hour labelling stakes and sticking them in the ground as guides for the planting of elms, maples, ash trees, pines, hemlocks, and cedars, and there before him is a single elm, covering in the spread of its branches a larger space than he has devoted to the whole group. The truth flashes upon him that he is working at a trade at which he has never served an apprenticeship, and he speedily arrives at the conclusion that it will be safer and cheaper to seek the aid of one who has learned the business.

"It will, I trust, be evident that this primary work of arrangement which I have been describing is what really constitutes the 'landscape architecture' of the place, to which all subsequent decoration is subordinate, and the skill and judgment of the artist are shown in the tasteful adaptation of the natural features to the necessities of the case, and the attainment of the most graceful development of whatever attractive features the place may possess, without any sacrifice of the obvious demands of convenience. If the reader will consider the endless variety of combinations of natural features upon which it is the artist's province to operate, and the equally varied tastes and necessities of humanity which are to be provided for, he may perhaps obtain a realizing sense of the demands which are made upon his taste and ingenuity."

In the selection of trees for ornament and shade, some regard must be had to variety of kinds to produce fine effects by contrast of foliage, as well as to the habits of the trees and their adaptation to climate and soil. In almost all localities of this country, however, the most desirable trees for ornamental purposes grow well, if proper care is given to them.

The manner and style of laying out and ornamenting the grounds about the dwelling, depend upon a variety of circumstances. In the first place the area to be devoted to the purpose is to be considered; and next the conformation of the ground and its relative situation to the surroundings are to be taken into account; then the style of the dwelling, especially if it be a costly edifice, has more or less to do with a tasteful and judicious plan. The subject is, indeed so broad and diversified that no general directions, applicable to all cases can be given. Where the grounds for ornamentation are large, it will be found advisable to call in the services of a professional architect whose knowledge and skill in the development of a plan, are almost always indispensable, for his experience and observation will suggest an arrangement producing effects which an unpractised or unprofessional eye would fail to discover, as possible to the place.

A cottage residence in the country is often located in a sequestered situation in a valley of considerable extent, comprising ten or fifteen acres of land, covered with natural forest trees, and enclosed on either hand by high wooded hills. The approach to the cottage from the main road is sometimes by a straight line from the gate, but a graceful curve is in better taste, with a sweep for turning car riages in front of the house well gravelled, another leading to the rear, the stable and other buildings.

The forest trees must be thinned out, and here the services of the landscape architect are necessary as we have already seen in the extracts quoted from Mr. Cleveland's work. The drives and walks may be placed so that they will be shady and cool in summer and attractive at all seasons, from their sylvan aspects. Many times a serious mistake is made in thinning out trees on a wooded place, by taking out trees that should be left standing, not perhaps because of their appearance but from the advantage they are to finer and more vigorous trees about them.

In thinning out trees, a novice usually cuts out the poorest, leaving the finest specimens standing singly and isolated. This is not judicious as the latter are liable to be blown down or ruined by severe storms. It is better to leave the trees standing in masses here and there and taking others out in a body thus leaving open spaces or glades at intervals. The contrast to the groups and thickets produces a fine effect, while the latter afford mutual protection and support against severe winds and storms, and become more vigorous, sending their roots farther out and showing more luxuriant spreading tops. In placing the walks, shrubbery, flowers, etc.,etc., the most pleasing effects are desirable consistent with the place, and these will be developed by the architect. If however, the owner insists upon being his own architect, let him by all means consult some of the best works upon landscape architecture.

In this chapter only the more prominent characteristics in the ornamentation of a few cases, different in kind, can be noticed.

Mr. Downing in his "Cottage Residences," gives a number of designs for laying out and ornamenting grounds in connection with the dwellings described. The illustration of a cottage in the English or Rural Gothic style, (facing page 25 of THE HOME GUIDE) is accompanied in Downing's work by a description of the grounds. The material parts of this description are here given, to indicate what is appropriate for such a dwelling's surroundings.

The area of surface for the grounds on which this cottage is located comprise about an acre and a fourth. The lot is bounded by a street both in front and rear. One-half of this plot in the rear of the house, is devoted to a garden for fruits and vegetables, and the remaining portion, comprising the space in front and at the sides of the house, is laid out as a lawn, shrubbery and flower garden in the picturesque manner. The carriage road, leads to the front door and the stable; there are irregular beds cut in the turf, and stocked with annuals and perennial flowers, on either side of the walks near the sides of the lot; on each side of the house, extending from near the kitchen nearly to the sides of the lot is a thick belt of shrubbery composed of mountain ashes, syringas, and lilacs interspersed with balsam of fir and arber vital to give a cheerful appearance in winter; in the rear of the kitchen are planted two or three hemlocks and larches; immediately behind the shrubbery belt are two plats of grass for bleaching and drying clothes.

In the ornamented portion of the grounds before the house the whole surface, aside from the walks and the flower-beds, is laid down in turf and kept neatly mown. This gives an appearance of greater extent to the area than it could possibly have by any other arrangement, while it will be more agreeable to the eye through the whole year than any extensive disposition of parterre or flower-beds directly under the eye.

Few persons of taste will disagree with Mr. Downing's view, that a fresh, verdant lawn varied only by walks and green trees, is a delightful object at all seasons and more especially in the middle of summer, while at the latter period, flower beds have frequently a dry and parched appearance, but poorly compensated for by the brilliancy of a few plants in bloom, which scarcely hide the surface.

In case of an expensive residence or villa, the grounds attached should comprise an area sufficient in extent to correspond with its character and style. The most eligible location for such a residence is adjacent to the bank of a river, elevated upon a plateau from fifty to eighty feet, the ground falling off somewhat rapidly from this level along the river bank.

"This place, (we quote from Downing,) like a great many in this country of its character we will suppose to possess a richly wooded hanging bank on its river side. This will afford us a fine opportunity to create a most agreeable series of walks. These walks may be conducted in easy directions through the wood and along the bank, occasionally intersecting each other. They may often approach each other very near without being visible one from the other, in consequence of the thickness of the foliage in some places, or the irregularity of the surface in others. They will be full of variety,—now leading to a point where a lovely view suddenly bursts upon us, and again plunging into a secluded portion, where the dense foliage of evergreens shuts out all other objects, and gives a quiet and secluded character to the scene. Rustic seats placed here and there in the most inviting spots will both heighten the charm and enable us to enjoy at leisure the quiet beauty around. A very great advantage which walks made in such a situation have, is the trifling care and expense necessary to preserve them in order. But few weeds grow in the shade of large forest trees and the character of the place renders it unnecessary that the walks should have a very trim appearance."

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"When a situation like this is selected for a villa residence, with a bank richly clothed by a natural growth of forest trees, and with, perhaps, scattered groups of large trees here and there elsewhere, the art of the improver should lie in harmonizing all his improvements with the main features of the place already existing. Almost every place of this kind has a natural character of dignity, or picturesqueness derived from the rich banks of wood, the noble river, and the finely undulating surface, which must be kept in view in all embellishments. The trees which are planted in the larger breadths of the lawn should be elms, oaks, horse-chestnuts, and maples, or other species of large growth, so that they may correspond in expression, when somewhat grown, with those already existing. No formal avenues or straight lines should be planted to raise a discordant expression when viewed in the same *coup d'oeil* with the existing groups and masses of foliage; and the larger breadths of lawn at a distance from the windows of the house should not be broken up by any frippery, walks or parterres which might detract from the breadth and simplicity of the scene. In a place where there is a character of dignity and simplicity arising from extensive prospect, large and lofty trees, and considerable breadth of cover, we should be extremely cautious about introducing too much of the little details of the flower garden or shrubbery ornaments in the foreground, lest they should degrade or weaken the higher character of the scene. We should rather place the latter in a more secluded spot where they will form objects of beauty to be considered entirely by themselves, and not in connection with other objects."

In the case of small suburban cottages where the ground for ornamental purposes is limited to a small plot, that portion designed for a kitchen garden may be separated from the front by a trellis, and vines trained upon this, will screen the rear from view. Suitable vines for this purpose, by reason of their foliage, flowers, and fragrance, are the following: Monthly fragrant honeysuckles, blooming from May to November; Chinese twining honeysuckles, from June to October; yellow and red trumpet honeysuckle, from May to November; sweet scented clematis, August; Virginian silk or Periploca, July; Chinese Wistaria, May; climbing Boursall Rose, June; double

Michigan Rose, May to December. In two years, if these vines are properly cared for, a delightful barrier will be formed, which at no season except winter will be without flowers.

The arrangement of the ornamental portion, will depend upon the size and situation of the lot. The outer border can be planted with handsome trees and shrubs of varieties that will give a pleasing contrast in foliage and those that flower should be selected with reference to the time they bloom, so that a succession may be had as long as possible. In planting trees place them at proper distances apart. Very few will be required, for the limited space will not permit many without planting them too closely together. In selecting these trees, evergreens must not be overlooked. The Norway spruce is one of the finest, as its dark green foliage is retained through the winter. A row of elms and maples along the street or road, will, in a few years, furnish a fine shade; the habits of these trees render them universal favorites for shade.

The yard, or grounds about the dwellings should be laid down in turf and the grass kept mowed closely, which gives it a neat appearance always. In this may be planted a few choice shrubs, roses, etc., which flower at various times during the Spring, Summer and Fall, and charm both from their bloom aud fragrance. Downing recommends for this purpose, Pink Mezereon, which blooms in March, sweet scented shrub in flower in June, Baron Provost Rose, from June to November. Fragrant Clethra in August, Purple Magnolia in April, Missouri Currant in April.

James Vick, Esq., the great Rochester Florist, has given, in one of his catalogues, some valuable directions for ornamenting the grounds of rural homes, which are apposite here, and we insert them:

"Man may be refined and happy without a garden; he may even have a home of taste, I suppose, without a tree, or shrub, or flower; yet, when the Creator wished to prepare a proper home for man, pure in all his tastes and made in his own image, He planted a garden and placed this noblest specimen of creative power in it to dress and keep it. A few suggestions on the Improving of Grounds and the Adornment of Rural Homes, I think will be useful, and prevent a great many inquiries that I am unable to answer fully and satisfactorily by letter, especially in the business season.

"In the first place, I would remark that the space in front of the house, and generally the sides exposed to view from the street, should be in grass. No arrangement of beds, or borders of box, or anything else, will look so neat and tasteful as a well kept piece of grass. It can also be kept in better order at less cost than in any other way

Mixed beds of flowers and shrubbery in the most conspicuous part of the garden is always unsatisfactory. Get a good plat of grass, and good, dry, neat walks, and all other things will soon follow with but little trouble. If the walls and the carpet of the parlor are tasteful, the room will look neat with very plain furniture, or with little of any kind. The front garden will appear well if its carpets and roads are tasteful with very little else. There is no object in making a furniture shop of the parlor, or a little nursery of the home garden.

"The very first thing needed in improving ground is to secure good drainage. Have good drains made to carry off all waste water from the house and surplus water from the soil. These can be made of stone, laid in any way that will leave an open and secure place for the water to pass through, though where drain tile can be obtained they are as good as anything and usually cheaper. The drains should be from two to three feet deep. Cut a trench as wide as is needed for convenient working, and as deep as you have determined is necessary, and lay the stone or tile at the bottom, being careful that the work is well done, for this is the foundation of all improvement, and the correction of any failure is made only with a good deal of trouble and expense. This secures a dry soil at all seasons of the year, and a healthy growth of plants or trees.

"The next thing is to prepare the soil and make the walks. Make no more roads than are absolutely necessary, as many walks divide the lawn too much, especially when small, and greatly disfigure it. Of course, there must be a bold walk to the front door, and one passing from this to the rear of the house, and in general no more will be necessary. These must be made in the most convenient places—in the place that one would naturally take in going from one point to the other.

"If the ground to be improved is only a small lot, it can be done best by the spade, and it is not well to endeavor to do it with the plow. In that case mark out the walks first. Do this by setting up little sticks on the line you design for the road, changing them until you get just the curve that seems graceful and pleasant to the eye. Put a row of sticks on each side of the road, measuring carefully so as to get the width equal. Another plan for securing the desired curve to walks is by the use of a stout line staked down where the walk is to be laid. Next, remove the earth from the walk to about the depth of eighteen inches, using it to fill up any low places. The walks now, of course, have somewhat the appearance of ditches. The operator is prepared to pulverize the soil with the spade. Have it done thoroughly, sending the spade well down, and completely inverting the soil, but leaving about six inches on each side of the walk undistured for the present, so as not to break the line of the road. All stones found in digging should be thrown into the roads, and often sufficient will be obtained to fill within six or eight inches of the surface; if not, enough can be procured usually without much difficulty. The stone cutter's yards, the brick yards, and the stone piles in the roads and fields generally furnish abundant material. When the walks are filled with this rough material to within six inches of the surface of the soil, the ground being raked off nice and smooth, dig the six inches left undug on the edges of the walks, being careful to keep the edges true and as originally staked out, and then set a turf about six inches wide for a border to the walk, being careful to keep the turf as low as the level of the adjoining soil, or a little lower, and to do this, remove three or four inches of the soil where the turf is to set, according to its thickness.

"A good deal of this rough work can be done in the autumn, so as to leave only the finishing up in the spring; but if commenced in the spring, it should be hurried up so as to get the grass sown as early as possible, for grass seed will not start well unless it has the benefit of spring showers. All being done as previously advised, sow the grass seed on the well prepared surface, raking it in, and if pretty dry, it is well to roll the soil after sowing. Sow Red-Top or Blue Grass, or a preparation of the most desirable grasses for lawns, sold as Lawn Grass, at the rate of *four bushels to the acre.* In our Lawn Grass we always put a little Sweet Vernal Grass, on account of its delightful fragrance. If you use Red-Top or Blue Grass, get a little Vernal and use with it, a pound or two to the acre. Most persons like also a pound or two of White Clover to the acre. I do not consider it very important what kind of grass is sown. The preparation of the soil and the after care of the lawn is of far more consequence. If the grass is sown early enough, and the weather is at all favorable, by the first of July, the lawn will look pretty green, and from the middle to the last of July will need cutting, and after that must be cut as often as the little Lawn Mower can get a bite. These Lawn Mowers are a real blessing, for not one in a thousand can cut a lawn properly with a scythe, and therefore our lawns, before the introduction of these mowers, always looked wretched. I do not consider any of them perfect, but there are several that will do good work if a little care is had to keep them in order.

"It will be strange if a great army of weeds do not appear with the grass, but do not take it for granted that these weeds came from the grass seed sown, as many have done, because if you had not sown any grass the weeds would have been just as abundant. The farmer who finds the weeds among his corn and potatoes never imagines that he planted them with his seed. As soon as the grass and weeds get high enough to be cut with a scythe or Lawn Mower, cut close and evenly, and repeat this operation as often as possible. The weeds will soon disappear. A few, perhaps, it may be necessary to remove by hand, but this will not often be the case.

"After sowing the grass, finish the walks by covering the rough stones with five or six inches of gravel, as clean as can be procured. It is best to leave the finishing of the walks until the last, because, even after sowing the grass seed, at raking it in, a quantity of stones will be gathered, and you will need a place to put them and the walk will need the stones. The road will be always dry and free from weeds and grass. If the earth should wash from the edges of the lawn and cause weeds to start, sow salt along the edges and you will see no weeds for a season.

"In very small places it would, perhaps, be as cheap to sod the whole, instead of sowing grass seed. Where this is desirable, good turf can be procured from the roadside or pasture, and it should be well and neatly laid. In large places the plow can be used instead of the spade, with great economy of labor. In that case the whole lot should be well plowed and dragged before the walks are staked out. After this, stake the walks and remove the earth the necessary depth, using it to level off the low places. There will always be a good deal of work for the spade and rake, even when the plow and drag have been thoroughly used.

"Two great errors are usually made, both by gardeners and amateurs; one destroying the lawn by cutting it up with unnecessary walks and flower beds, the other producing the same result by almost literally covering it with trees and shrubbery. Grass cannot grow well among the roots and under the shadow of trees and shrubs, and no lawn can look well cut up in sections by numerous roads. Most of the little lawns we see in this country are almost entirely destroyed by one or both of these causes. The main part of the lawn should be left unbroken by any tree or shrub, as a general rule, and if any tree is admitted it should be only an occasional fine specimen, like a Purple Beech, or Magnolia, or Cut-leaved Birch. The shrubbery should be in clumps or groups, in proper places, and so thick as to cover all the ground. The soil under them should be kept cultivated and clean like a flower bed. A tree or two in certain appropriate places for shade, is, of course, desirable; but plant for the future, not for the present, and always have in view the size and form and habits of the trees when full grown, and not their present small size and perhaps delicate form. Every curve should be a sensible one; that is, have a reason for its course, either real or apparent; therefore arrange your planting so as to make an apparent necessity for every turn.

"The great difficulty with American gardens is that they are too large, and not sufficiently cared for. If we gave the same amount of labor on a quarter of a acre that we now expend on an acre, the result would be much more satisfactory. No one should have more ground in garden than he can keep in the highest state of cultivation. It is this kind of excellence that affords pleasure, while failure or partial success is a source of pain. It is not only a fault to cultivate too much ground, but even too many flowers. Some seem anxious to obtain and grow everything. This is not best, especially where there is not a good deal of time and money to be devoted to the work. A choice selection is best, and I like every cultivator of flowers to have a pet or hobby. Take, for instance, the Pansy, and make it a pet. Obtain the choicest seed, and give the plants the best of care, and you will see to what wonderful perfection it can be grown. In a few years you will tire, perhaps, of this. Then adopt the Balsam, or Stock, or Aster. Always have something choice—something grown better than any one else is growing it—something you have reason to be proud of. It will astonish you to see how flowers thrive under such petting, and what a wonderful exhibition they make of their gratitude.

"Some persons may think from what we have said in favor of grass in front of the house in preference to beds of flowers, that we are no friend of these beautiful treasures—these delightful children of the field and garden, who speak to us in every fragrant breath, and lovely tint, and graceful form, of Him who spake from naught this matchless beauty. Far from this. A home without the children of the field, and the flowers of the family, we might, perhaps, enjoy, but we have never had to endure the trial. I only wished them to be treated in a proper manner. In the center of the lawn, especially if opposite a window, it is well to make a round or oval bed, and on the borders or near the edges of the lawn, beds of various graceful forms.

"These beds should be filled with flowers that will keep in bloom during the whole season, and it is best generally to have but one kind in a bed. Phlox Drummondii, Verbena, Portulaca, and the scarlet Geraniums, are well adapted for this purpose, and occasionally it is well to introduce the ribbon style, as described on another page. These beds, must be remembered, are for the adornment of the grounds, and they furnish no flowers for the house—no presents fo friends, no boquet for the dining room, or for schools or churches, or the sick room. These we must have. So, just back of the lawn, make generous beds of flowers that you can cut freely—Asters, Balsams, Zinnias, Stocks, Mignonette, Sweet Peas, &c. In these beds you can also grow the everlasting Flowers for winter use. It is best to make such beds oblong, about four or five feet in width, so that you can reach half way across, with alleys or paths between.

"I was much pleased when in Europe to observe the great skill exhibited in giving an air of rural taste to very small city lots, that no one in America would consider capable of an exhibition of rural beauty. Many of these lots I should hardly think as much as twenty-five feet in width, and yet specimens of neatness. Some of these little gardens are attached to houses in rows, others belonging to what is known as semi-detached cottages, that is, two only joined together.

"The lots are usually so narrow that the raised bed must be placed on one side of the center to allow of free passage on one side. They are generally divided by walls, and these would be fearfully unsightly but for the fact that they are covered and usually entirely hidden with luxuriant Ivies and other climbers. The ornamental center border is made of a composition resembling stone, and is very pretty. The border for the beds on the sizes is usually of common burnt clay tiles, of neat designs and quite reasonable in cost, about 12 cents per foot, and is much preferable to box, or anything of the kind, particularly in our severe climate, where plants usually suffer so much in winter.

"A few well filled vases are a fine and appropriate decoration of any grounds if kept in good condition with healthy plants. The evaporation from baskets and vases is very great, much more than is generally supposed,as every side is exposed to air, sun, &c., and they must receive a copious supply of water every evening to keep the plants in healthy condition. In addition to the usual forms there are very beautiful vases, of European make, representing old stumps, with openings for inserting plants.

"Another very pretty ornament for the garden is the Rockery, made of rough stones, tastefully laid up, with earth sufficient for the growth of plants suitable for this work. Low growing plants with succulent and ornamental foliage are appropriate to the rockery—Portulaca is admirable. I would like my readers who have had no experience in this kind of garden ornamentation to try a specimen in some retired quarter of the garden, so that if it proves a failure no harm will be done."

From what has been given in the foregoing pages upon the subject of ornamenting home grounds, any person who has a taste in this direction may be able to compose a design for a small place which will be more or less attractive and serve a useful purpose from the pleasure to be derived from it. The elements of the beautiful consist in good proportions, chasteness, and agreeable and harmonious arrangement of simple forms. But in cases where extensive grounds are to be improved it is safe to call in the services of a professional landscape architect.

In the selection of plants and flowers a variety which will give a succession of bloom throughout the season is very important. A knowledge of the various kinds of flowers that will fill this requirement, is indispensable, else it will be necessary to consult a good florist. It is always a good plan to send for the catalogue of a well-known florist, not only to select seeds, bulbs, or plants but to keep up with improvements, and new and popular varieties of flowers.

The annuals proper, produce plants that flower, perfect their seed and die in one summer; however there are some that are treated as annuals in northern climates that live through several seasons in a milder climate. For a profusion of gay flowers and a brilliant and constant show late in the season, the annuals are the main dependendence, but we may have some Perennials as the Verbena, Pansy, Dianthus Anterrhinums, &c. The list of annuals is very large and to select understandingly, it is necessary to know the nature and habits of the various kinds, or at least, enough to choose what would be the most desirable. The same thing applies also to Perennials, Biennials, etc.

The climbers, (as Mr. Vick aptly says) furnish the true drapery of nature, and are unequalled for grace and shade. But judgment must be exercised in selecting them with reference to their adaptation for the purpose desired of them. Those that are delicate must not be expected to fill requirements to which only robust and strong-growing varieties are adapted. They must be provided with support at the proper time; as it will be difficult to prevail on them to assume good habits after being neglected. They are beautiful in their place both indoors and out. They must be watered thoroughly every evening, except in rainy weather lack of attention in this particular is the reason of failure in very many cases.

Perennials do not flower until the second season. They do not bloom constantly or for any great length of time, and hence are not adapted to a place on the lawn. But they are beautiful in their place. The seeds may be sown in the spring with annuals, or later in the summer; but if the planting is deferred until the season is hot and dry, the seeds will not germinate unless the soil is kept moist and cool. Some of the choicest flowers are of this class.

Summer flowering bulbs are a very useful and beautiful class of flowers. The bulbs are tender and easily destroyed by freezing; it is unsafe, therefore to plant them until there is no danger of Spring frosts. It is necessary also to take them up before very hard frosts in the fall, and they must be kept in a safe place until Spring. They are easily preserved in good condition and will richly repay for the little care required in their treatment.

Engravings of various kind of flowers, beautiful and attractive are given in THE HOME GUIDE, indicating some of the most popular varieties.

As an appropriate conclusion to this portion of our work, we give the following upon the subject of "Herbaceous Gardens," from the pen of Henry Winthrop Sargeant, in that excellent work "Cottage Residences:"

"We have gone through several gradations of gardening, from the stately Italian school — with formal and architectural beds and borders — to the highly ornate and elaborate designs and patterns of the "bedding-out system," as it is called -- parterres of embroidery, each bed representing a color and a series of beds of different colors, forming designs, scrolls and embroideries of the most complex, dazzling and intricate styles, and certainly, when well done and artistically arranged quite captivating from its very perfection, with the single drawback of monotony, having no variation during the summer months, and inevitably destroyed with the first frost, requiring the same work in striking and storing the plants, and in forming and arranging the designs, year after year.

"Though this style has still many advocates, yet the tide has commenced to turn and is slowly rolling back to the good old herbaceous borders of the past. Mr. Disraeli, in his charming description of Corisande's garden, in *Lothair*, has perhaps contributed to this change. I cannot illustrate this garden better than by using the words of a late article in Mr. Robinson's magazine describing this style of mixed planting.

"'Let us recall,' he says, 'the charming diversity of color and of form which they, the annuals, perennials and bulbous plants of spring, present to our admiration. Of form, from the tall Imperial Fritellaria, having the resemblance of crown and sceptre, also the prostrate Stone-crop carpeting the ground beneath. Of color, what a range! what a variety! all colors, primary and intermediate, brilliant and soft, positive and neutral. Colors to harmonize, colors to contrast, colors which I like, colors which you like — all of them are here. Does your eye delight in the glow and brightness of the more vivid tints? Look at that Anemone — well named Fulgens — all afire in crimson glory. Regard these Tulips! General Garibaldi in his scarlet uniform — or royally named and royally apparelled 'Rex Rubrorum,' King of the Reds. Gaze upon that Gentian (vernal), luminous, gleaming like the breast of a humming-bird, with an intense and dazzling blue. Watch that clump of yellow Crocus as they ope to receive the kisses of the sun, and what is there in the stone or summer garden, in Orchid, Allemanda or Calceolaria, which can vie with it in its velvet sheen?

"'Or have you what is called a more quiet taste? Bend over this bed of Myosatis Dissetifolia, bluer than the Turquois, blue as the heavens; or turn to that patch of exquisite, dainty little Scilla, or to that sheet of roseate Silene, blue Mountain Anemone, purple Pansy, pale yellow Primrose, bright yellow Cheiranthus, lilac Aubretia, or to those snow-white masses of Candy Tuft (Iberis Corrœfolia, the fairest of the fair), of Alyssum, Arabis Saxifrage, Daisy and Snowdrop.

"'Now glance at that combination, at that bed of golden Feverfew, dotted here and there with purple Crocus; of white Candy Tuft, from which, at intervals, the bright red Hyacinths arise; or of Cerastium, with small circular patches of scarlet Anemone, or Clieneden Pansy, or Erica Carnea, with the golden Arabis intermixed; or of Sedum Acre Aureum, with white and red Tulips, inserted *a la* pincushion.

"'What foliage so attractive in the summer garden as that of the gold-tipped Stone-crop (Sedum Acre Aureum); of the Daisy which has leaflets of green and gold; or of the exquisite variegated Thyme? Is not the golden Feverfew brightest in the spring? Are not the variegated Arabis, Euonymous and Periwinkle, and the silvery Cerastum, Centaurea, Graphalium, and Santolina most beautiful in their early growth? And then, what fragrance from the Violet and Primrose, Hyacinth and Wall Flower! All herbaceous plants can be multiplied quickly and will soon cover the ground, having the additional advantage of becoming stronger and more beautiful every year, and do not require annual renewing, like ribbon gardening.'

"In the narrowest borders such things as House-leeks, Stone-crops, and Saxifrages would do well; and among them might be planted bulbous plants, such as Crocus and Squills."

It should be borne in mind that disappointment often results from injudicious selections, and very desirable flowers are sometimes condemned as worthless because they have been used in the wrong place.

"With a view of assisting beginners, we add the following names:

FOR SPRING.

Alyssum saxitale. Adonis vernalis Anemone apennina. Coronaria and Sylvestris. Arabis albida. Asperula odorata. Aubretias bulbocodium vernum. Wall-flowers, including cheiranthus. Marshallii. Various kinds of crocus. Lily of the valley. Decentra eximia and spectabilis. Erica carnea. Erysimum ochroleucum. Ficaria grandiflora. Hepaticas. Different kinds of Iberis. Iris nudicaulis. Premila and reticulata. Snowdrops. Lithospernum prostratum. Myosatis dissitiflora and sylvatica. Orobus vernus. Daffodils. Phlox reptans and lubulata. Ranunculus monspeliacus. Montanus and the double-blossomed Aconitifolius. Sweat rocket. Scilla siberica and bifolia. Triteleda uniflora. Tulips and Violets.

FOR SUMMER.

Acanthus latifolius. Achillæa upatorum. Ptarmica pleno. Millefolium roseum. Aconitum japanicum and variegatum. Alstrosmeria aurea. Anchusa italica. Anterrhinums. Aquilegia glandulosa, cærulea and truncate. Aster Pyrenœus. Baptesia Australis. Betonica grandiflora. Double-blossomed Calystegia putrescens. Campanulas of various kinds. Catananche cærulea. Centranthus ruber. Coreopsis lanceolata and tenuifolia. Corydalis lutea. Different kinds of larkspurs. Dracocephalum ruyschianum. Dictamnus fraxinella and albus. Erigeron peiboldie. Gallega officinalis. Gentiana asclepiadea. Geranium ibericum and sanguieneum. Helianthus rigidus. Numerous species and varieties of the Flag (Iris) Everlasting Peas. Lilies of various kinds. Linaria dalmatica. Lychnis chalcedonica (vars.) and vicaria plena. Lythum. Salicaria roseum. Lavatera ungueculata and thuringiaca. Lupins malva, alcea, and moschata. Monarda didyma. Œnothera fruticosa. Mærocarda riparia. Margineta speciosa. Platycodon grandiflorum. Phlomis russelliana. Herba vente. Herbaceous and other Phloxes. Pyretnum carneum. Rudbeckia speciosa. Salvia argenta spirœa. Aruncus palmata and venusta. Statice latifolia and tartarica. Symphyandra pendula. Symphytem bohemicum. Tradescantea Virginica and varieties. Trollius. Tropeolum polyphyllum. Veronicas and Verbascum chaixii.

FOR AUTUMN BLOOMING.

Acio autumnalis; Hollyhocks; Aconitum autumnalie; Anemone japonica and varieties; Arundo conspicua; Asters; Astilbe rivularis; Chrysanthemums; Eupatorium purpureum; Gaura lindheimeri; Merendera bulbœodium; Platycodon autumnale; Pyrethum serotinum; Polygonum cuspidatum and vaccinifolium; Sparaxis pulcherrima; Sternbergia lutea; Stevia purpurea; Tritoma uvaria and others.

The following perennial plants have fragrant flowers:

Adenophora litiafolio; Allium fragrans and odorum; Asclepias cornuti; Speciosa Douglasi; Calamintha glabella; Clematis flammula; Crambe cordifolia; Crinum capense; Daphne cneorum; Puicks; Dictamnus fraxinella; Funkia Iliboldii; several species of Iris Lavender; Leucojum vernum; different sorts ot Lilies; Lupinus polyphyllus; Malva moschata; Mirabilis jalapa; Muscari moschatum; Narcissus major and jonquilla; Pancratium maritum; Tussilago fragrans; Viola odarata; Wall-flowers and migonnette.

FACTS ABOUT THE HUMAN BODY.

Every person who is old enough, should acquire some knowledge of the structure of the human body, as such knowledge is of very great value in connection with health. It is not practicable or possible for people generally to make themselves familiar with the various departments of this branch of natural science, but every one may learn prominent general facts in human anatomy and physiology that are of much importance in the preservation of health.

Different anatomists have classed the organs of the body in different ways, but that of Bichat, slightly modified, is most in use. This classification is as follows: 1. Organs pertaining to the animal, volun tary or relational functions. 2. Organs pertaining to the nutritive functions. 3. Organs pertaining to generation or the reproductive functions. In the first class belong the organs of locomotion, innervation, voice and sensation. The instruments of locomotion are comprised in the frame-work or skeleton—as the bones, cartilages ligaments and joints. The muscular system comprises muscles, tendons, sheaths and their appendages as agents of locomotion. The nervous system comprises the brain, the spinal cord and forty-three pairs of nerves, spread through every part of the body, and encased in delicate sheaths of serous and fibrous membrane. The vocal organs consist of the larynx or throat, and the mouth, the former being the organ of the voice and the latter the organ of articulation. The special organs of sense are touch or feeling, taste, smell, sight and hearing.

The second class of organs in Bichat's classification, pertaining to the functions of nutrition and secretion consist of the organs of digestion, respiration, circulation, urination, and defecation. The digestive apparatus consists of the stomach, the liver, the pancreas, the duodenum, and small intestines, the large bowels and the rectum. Bile from the liver and pancreatic juice from the pancreas, are poured into the food as it leaves the stomach and proceeds to the intestines. The food passes through various stages — resulting from mechanical and chemical agencies present in the body—before it is fitted for introduction into the circulation and carried to all parts of the system.

The circulatory system, of which the heart is the center, consists of two distinct circles called pulmonary and systemic. This system embraces the heart, the arteries and veins of the lungs, and also the arteries and veins of the general system. Through the pulmonary artery and its branches the blood reaches the lungs; this is the pulmonic circulation. Through the aorta and its branches the purified blood flows to every part of the body; this is the systemic circulation.

The respiratory organs are the larynx, the trachea or windpipe, the bronchial tubes and air-cells within the lungs. The function of these organs is to supply the lungs with fresh air to vivify the blood, and expel carbonic acid gas and purify the blood from waste matter. Another kind of waste matter is conveyed from the blood by the kidneys, and voided from the bladder. Other waste matters are eliminated from the blood by defecation; thus we see the necessity of regularity in all habits necessary to health and the existence of human life.

In its original excellence the mechanism of the human body is perfect in design, beautiful in structure, and harmonious in all its parts. Health and happiness wait upon human existence, if the laws which govern life and well-being suffer no violence. Disease and premature death are mainly the result of the folly or ignorance of man.

Fig. 1.

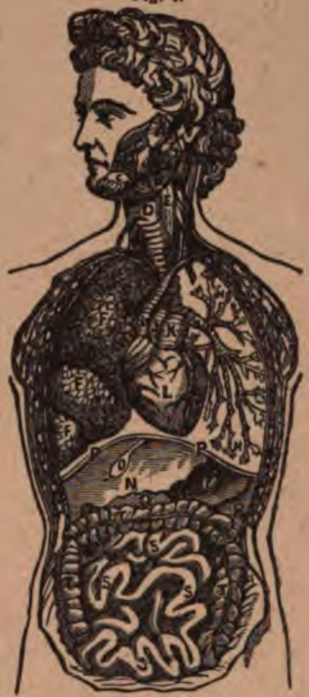


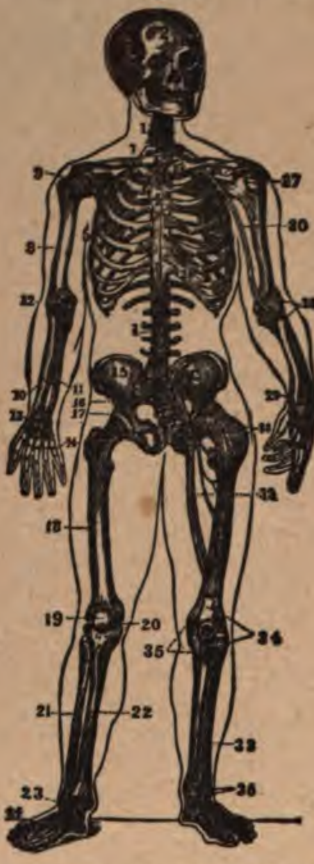
Fig. 1. A, B, C, Salivary glands. D, Trachea. E, Œsophagus. F, F, F, Left lung. G, Bronchial tube. H, H, Bronchia and air cells. I, J, K, Blood vessels connected with the heart. L, Heart. M, Stomach. N, Liver. O, Gall. P, P, Diaphragm. Q, Duodenum. R, Pancreas. S, S, S, S, Small intestine. T, T, T, Large intestine.

If we would be healthy we should know more about ourselves, for with a better knowledge of the organs of the body and their functions, we are able to guard, more intelligently, against infractions or violations of the laws of life. Hence the introduction of text-books and anatomical charts into the schools is eminently wise, for in this way may be acquired in childhood and youth, much information relating to the conditions upon which life and health depend.

THE BONES.

The skeleton* constitutes the frame work or support of the body. The front view of the skeleton is given by the accompanying cut. The location and name of the various bones are given at the bottom of the page, and are indicated by the corresponding figures in the engraving. The number of bones in the body, besides other information relating to them, will be given when the subject of broken bones and dislocations is taken up; that part of the subject will not be dwelt upon now. The bones, with the muscles and the skin constitute the locomotive and protective apparatus of the body. It is not necessary to describe the uses of the various bones. We know that the bones of the head, chest and spine are of great importance in protecting the vital portions of the body, that the lower extremities are indispensable to locomotion, and that the bones of the upper extremities exceed all others, or any invention of man, in the variety of motion and the uses to which they may be put. The bones are surrounded by a thin membrane, called periosteum.

Fig. II.



THE MUSCLES.

Some persons have a very crude idea of what is meant by the muscles. To an unpracticed eye, the flesh which covers the bones appears to be one entire mass. The red flesh is a bundle of muscles separated from each other by a thin transparent membrane, and each muscle

Fig. II. 1, Spinal column. 2, Skull. 4, Sternum. 5, Ribs. 7, Clavicle. 8, Humerus. 10, Radius. 11, Ulna. 13, Wrist. 14, Hand. 15, Haunch bone. 16, Sacrum. 18, Thigh bone. 19, Patella. 21, Fibula. 22, Tibia. 23, Ankle joint. 24, Foot. 25, 26, Ligaments of the clavicle, sternum and ribs. 27, 28, 29, Ligaments of the elbow, shoulder and wrist. 31, Ligaments of the hip joint. 34, 35, 36, Ligaments of the patella, knee and ankle.

* The engraving on this page, showing a front view of a Skeleton, is an exact representation, (reduced in size,) of Plate No. 1 of Cutter's Series of Anatomical Charts, which with the Key, may be obtained of A. H. Andrews & Co., Chicago

is separable into a great many fibers or threads, which like the whole muscles is encased in a sheath or thin transparent membrane, (fascia) like that which covers the bones, to-wit the periosteum. The muscles comprise fibers, fascia and tendons. The tendon, or cord at the extremity of the muscles, is formed by a union of the fascia that surrounds the fibers as well as the muscles. Thus the flesh is employed in producing the various movements of the body.

THE NERVES.

The nerves are small white cords, which proceed from the brain and spinal cord and spread through every part of the body. They form a kind of net-work over the whole external and internal surface of the body, though the skin is much more bountifully supplied with them than any other part. The nerves that pass from the brain are designated as cranial nerves, and those that pass from the spinal cord are called spinal nerves. They are composed of matter similar to the brain and spinal cord, and they are enclosed in a delicate sheath or membrane. The office of the nerves, spinal marrow and brain, is to generate sensation, thought, feeling, and motion, and wherever a nerve is found, there is sensation, or a capacity for pain and pleasure or action. Where there are the most nerves there is the most sensation; thus the parts having most of them are the eyes, ears, and all the organs of sense. The brain nerves are divided into twelve pairs, and the spinal nerve into thirty pairs. The nerves have blood-vessels and are susceptible of inflammation and disease like the other parts of the body.

THE BLOOD.

In the wonderful economy of the human body, the blood constitutes a great factor in preserving and promoting life. "Blood is life." We know that through the blood passes everything that is going to or coming from all parts of the body, either solid or liquid. The various tissues of the body grow or are maintained alive by the interchange constantly going on between them and the blood. The component parts or particles of the various tissues are constantly undergoing changes. Materials which are no longer useful to their organization and vital properties are disintegrated, removed, excreted, and their place supplied with new matter capable of continuing the functions necessary to life. Thus each part is being perpetually reproduced, whether it be bone, muscle, or nerve, healthy or morbid structure. Elsewhere in THE HOME GUIDE the importance of healthful food has been shown, and here again its necessity is urged. Our bodies require a due supply of proper food; this food must be digested, the nutritive portion absorbed and converted into healthy blood,and circulated through the system. This is the process by which life is preserved in man, and the effete matters removed by the various excretory organs or modified by purifying actions of the lungs.

The chemists tell us that there is no fluid in the body having so complex a composition as the blood. It is not necessary to refer to them in detail here. In the blood-vessels, and during life, blood consists essentially of two parts, differing greatly as to their characteristics and substances which compose them: one is solid, the corpuscles or globules; the other is liquid, the liquor sanguinis. The solid portion, according to Lehman, forms fully one half of the volume of the blood.

It is a fact well established that arterialization of the blood in the lungs is the primary cause of circulation in man. Respiration and circulation are so intimately connected, that life itself depends upon their unobstructed action. Asphyxia follows the inhalation of an irrespirable gas, and in cases of drowning the cause of death is that the heart exerts itself in vain to drive blood forward which is not arterialized. The blood is exposed to the air but a second or two during respiration, but the color changes, and the temperature rises a degree or two during the time of exposure; at the same time the venous blood parts with a certain quantity of water containing animal matter in a state of decay.

THE HEART.

The heart is enclosed in a case called the pericardium; its location is between the lungs, and it inclines to the right side of the chest. It has four separate chambers or cavities two of which are called

Fig. III.

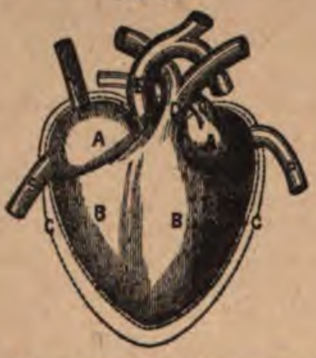
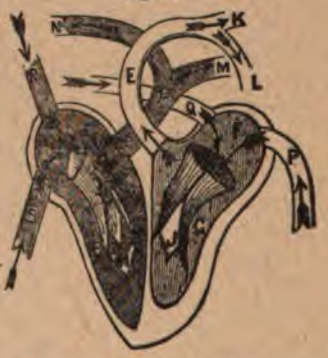


Fig. IV.



EXPLANATIÓN OF ILLUSTRATIONS.—Figs. III. IV. A, A, Right and left auricle. B, B, Right and left ventricle. C, Pericardium. D, Pulmonary artery and branches M. N. E, Aorta and branches K, L. F, Left auricle. G, Left ventricle. H, Tri-cuspid valves. J, Mitral valves. P, Q, Pulmonary veins. R, Vena cava descendens. S, Vena cava ascendens.

auricles and the other two, ventricles, and to distinguish them, we have a right and a left auricle and a right and a left ventricle. The auricles receive blood from the body and lungs; the ventricles send blood to the body and the lungs. The motions of the heart consist in the relaxations and contractions of the muscular walls of its cavities. The two auricles contract at the same moment, as do also the two ventricles, but the contractions of the auricles coincide with the relaxations of the ventricles.

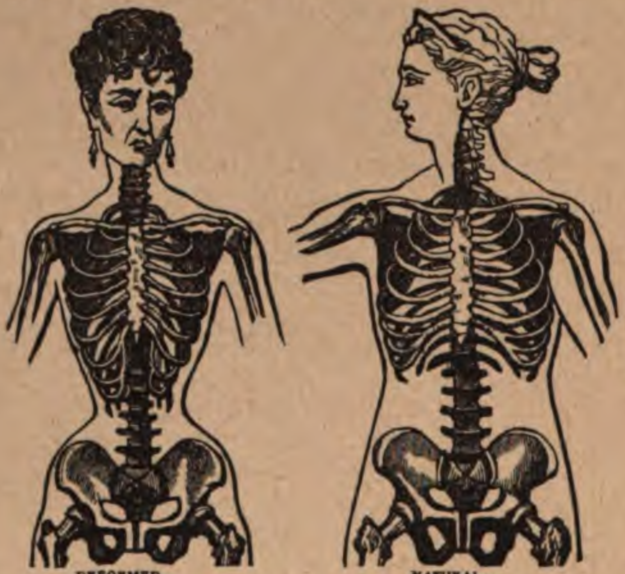
The course taken by the blood is as follows: From the left ventricle of the heart it passes into the aorta, and finds its way through all the branches of this great artery to every part of the body, moving on through the capillaries, which may at once be considered as the terminal ramifications of the arteries and the commencing tubelets of the veins. These tubelets converge into larger and larger venous trunks, the systemic veins, until they unite in two large veins called the *vena cava*; into these, ascending and descending, the blood flows into the right auricle and from thence into the right ventricle of the heart; from there it is driven into the pulmonary artery to be distributed to the lungs, and thence along the pulmonary veins until it reaches the left auricle from which it proceeds to the left ventricle — its starting point.

THE LUNGS.

The position of the lungs in the chest, in connection with the heart, illustrates an interesting fact. These organs are the great centers of life and hence they are placed where the greatest protection is afforded them. The lungs are enclosed in a membrane, the pleura. Each lung is divided into lobes of which the left has two, and the right three; and a large tube, the trachea, (or windpipe) extends from the mouth to the lungs. The trachea divides and subdivides into smaller tubes which are known as the bronchiæ, and air cells. In the act of breathing the air rushes into the air cells through the trachea and bronchial tubes, and then escapes through the same passages. When the lungs are filled with air, or in other words during inspiration, the ribs are raised and the diaphragm (upon which the lungs and heart rest,) sinks; thus the chest is expanded. When the air passes from the lungs, or is *expired*, the diaphragm is raised and the ribs are depressed.

In another part of THE HOME GUIDE other facts pertaining to the lungs will be found in connection with pulmonary complaints. The physiological facts given above are simply to show the great importance of guarding and exercising proper care in preserving intact the healthy action of the lungs. Our daily regimen has much to do with this matter and under heads of "The Air We Breathe," "The Clothing We Wear," "The Food We Eat," etc., in this work will be found much information connected with the subject which it is essential for all to understand.

And here it is proper to enter another protest against wearing tight clothing, and being clothed insufficiently during inclement weather. In infancy and childhood sins against the health of children are often committed by mothers or nurses. But evils of this nature are by no means confined to childhood. When fashion requires a violation of the laws of health it becomes a demon, and ought not to be tolerated. The fashion of tight-lacing has caused an incalculable amount of mischief, and although not now so general as it has been, it is still far too prevalent. The accompanying illustration shows the difference between a natural and well-developed chest, and one deformed by tight-lacing. A serious effect of this abuse is an interruption of the free action of the diaphragm, One of the offices of this organ is to aid the lungs in inhaling vital air, and exhaling that which has been vitiated, as heretofore explained, and this cannot be properly done when the chest is compressed and out of natural proportion.


DEFORMED. NATURAL.

But the evil does not stop here. The circulation of the blood is impeded, and an unnatural pressure is put upon the bowels and other organs There is no doubt that the frightful prevalence of prolapsus uteri is due to this, more than to any other cause. Besides this, a small waist is a defect rather than a beauty of the female form, for nothing can be truly beautiful which is out of proportion.

THE STOMACH.

The functions of the stomach will be considered in another place. Our purpose here is to state a few physiological facts in regard to it.

This organ is a curved oblong sac in the left side below the heart. It has three coats or membranes, in which are gastric glands that supply the gastric juice — a fluid so powerful that it will corrode silver or hardened steel. The food is mixed with this substance, which changes it into a grayish paste called chyme. The duodenum connects the stomach with the small intestine. Just above the duodenum on the right side of the body is the liver, which secretes bile, and with its cyst, gall also. These two fluids enter the duodenum by the same duct. Situated behind the stomach, is the pancreas which also secretes a fluid called pancreatic juice, which enters the duodenum near the bile duct. The fluids from the liver and the pancreas unite with the chyme, in the duodenum and change it into chyle, which is taken up by minute vessels called lacteals. These pass through small glands and unite and reunite with each other, concentrating finally in the thoracic duct. Into this duct the chyle is conveyed and carried into a vein at the lower part of the neck, where it enters the blood. The waste matters of the food are carried into the large intestine.

In presenting thus briefly a few primary facts pertaining to human anatomy and physiology, the principal object in view is to awaken more interest in subjects which so nearly concern human life and human happiness. Disarrangements and imperfections in the human mechanism, as in any mechanical contrivance, cannot be easily repaired without a knowledge of the construction of its parts, and although it is not expected that people generally will acquaint themselves fully with scientific physiology, still every one may learn general principles and facts connected with the subject that are of very great utility and value. The more familiar we become with the mechanism of the human body, and the functions of its various parts, the better we understand the laws of life and health, and at the same time we are more and more impressed with admiration and wonder at the perfection and harmony which pervades the whole human structure.

THE FOOD WE EAT.

The body has been compared to a furnace, and not inaptly, for combustion is constantly going on within it, and unless we keep it supplied with fuel — the food we eat — we are soon consumed. The slow and painful process of starvation is simply the wasting away and burning up of the substance of the body by the slow fire having no food with which to replenish it.

From this it will be seen that the care of the stomach is among the most important duties which devolve upon each individual. As has already been said, in substance, the stomach is the source whence the human organism is supplied with the materials of which it is built up. If we would have strong, firm, healthy muscles, a vigorous intellect, and a body free from disease, one must have pure, healthy blood; and this we cannot have unless the stomach receives proper care and attention. Overloading it, either with solids or liquids, is a fruitful source of disease. The physicians inform us that in so doing, chymification is retarded, the contents of the stomach become acrid and sharp, and often aphthous patches are produced, and by the time the miserably digested food reaches the heart, it is in a poor condition to be sent throughout the system for its nourishment. As well expect a house built of poor, rotten timber to be strong and durable, as to expect the human fabric to be sound and healthy out of poorly digested food. It is an impossibility. We may live through such torture, and to a good old age, but there will always be something the matter Either the head aches, or the stomach feels heavy, or there is general debility, or you are unnaturally peevish and irritable, or you have lost the power of concentrating thought, or some other ill that flesh, through ignorance, is afflicted with.

Torturing the stomach with half-masticated food is another fruitful cause of unhealthy blood. The saliva when thoroughly mixed with the food by mastication exerts such an essential chemical influence upon it, and in fact is the only true solvent of certain portions of our diet, that we cannot, and be well, break this all-important law of chewing our food fine. Our bodies are heterogeneous, nearly all the elements entering into their composition, and all essential to perfect development and sound health. When it is deprived of any one of these materials, it becomes weakened and unsound, just as much as any structure, made by human hands, is comparatively worthless if made of imperfect timber. A man would appear insane to say that a good, strong, durable building could be made from poor materials. and yet thousands live every day as though they believed that the human fabric could be nourished and built strong and healthy out of poorly digested food. When we eat rapidly, we deprive our blood of certain essential elements; when we overload our stomachs, we send a vitiated fluid to our hearts to repair our bodies; when we habitually pour alcoholic drinks down our throats, we pervert the nutritive processes, prevent the hydro-carbonaceous products from being eliminated as freely as is compatible with health. and produce a fermentable condition of the blood. Our poor, tortured stomach pleads with us by intense nausea, and oftentimes by throwing off its contents, and if we fail to heed this warning, our nerves begin to get weak and unstrung; nature paints our noses fiery red and puffs them up to disfigured dimensions, as if to shame us into our duty to ourselves; finding us still obtuse to her warnings, and, as if to mortify us into an observance of her laws, she coats over the fiery red with a purple tint, and adds another puffy puff to the nasal organ, staggers us through the streets, throws us into the gutters, and, finally, hands us over to delirium tremens, who deals with us according to our deserts.

When we swallow our food whole, overload our stomachs, take cold, or break any law of nature whatever, she informs us almost immediately of our danger. If rapid eating, or overeating, is indulged in, her language is at first a dull, uncomfortable feeling in the stomach, accompanied by slight pain and depression of feelings. Not heeding this, the stomach continues to grow heavy like a fifty pound ball, the feelings sink into despondency, the liver becomes affected, the skin takes on a sole-leather hue, the features become distorted, the disposition becomes wrangled, and dyspepsia has completely routed health, and has us, soul and body, in his destroying power. Nature warned, but we did not listen. She is peculiarly sensitive. Even the slightest cold that we take is not overlooked by her. Her language to us then is a dry, hot skin, headache, loss of appetite, etc., she is trying to throw open the millions of doors, or pores of the skin; if she succeeds, we recover with but little inconvenience; if she fails to do this, or to make us understand our condition, she continues to plead with us, by making us so ill that we are compelled, perhaps when too late, to heed her warnings.

Happy the human being who pays attention to the language of nature; for every word she utters is a lesson that may be turned to inestimable account. Health, happiness, life, is sacrificed every day owing to our obtuseness to her teachings. For the proof of these statements let a healthy person swallow half-masticated food in immoderate quantity, for six months, even, then for the same length of time eat slowly, and in moderate quantity, and note the difference in health and feelings, and the months that you observe nature's laws you will feel like a new being, and you will almost involuntarily exclaim, "Is it possible that we ourselves can keep our bodies well, or make them ill at pleasure!"

The contrast between the temperate and the intemperate life is so great that we have but to bring the two cases to mind to show us the pernicious effects of the one and the beneficial results of the other. Nature is all truth, and whenever anything is wrong with the body, it is her language telling us that something is the matter, and that if we desire health, and not to "shuffle off our mortal coils" prematurely, we must obey.

Science has made known many facts of the very first importance in regard to the nature and uses of food, and the various methods of preparing it. The subject is one which has engaged the attention of men of the highest scientific attainments and extensive practical knowledge, for the reason that there is none which more intimately effects human existence.

A clear and comprehensive idea of the nature and uses of food is given in a valuable English work* under the head of "Household Chemistry," from which we make the subjoined extracts:

"Let us look for a moment at the changes which the food undergoes when eaten. It first goes to the stomach, and is there subjected to the beautiful cooking process which is called digestion. We shall have more to say about this farther on, and need only remark here, that by it the food is converted into a creamy liquid. This passes on into the intestines, and hence, by a most elaborate and wonderful process, it is absorbed into, and becomes a part of the blood. All the food which acts any useful part in the body is first converted into blood. The blood—the mighty river of life, as it has been called—rushes with amazing force and swiftness through every part of the body. And it is from the blood that the constantly-wasting organs of the body, muscles, bones, nerves, and all derive their nutriment;

Cassell's Guide.

it is by it that their losses are compensated. Finally, to make an end of this part of the wonderful story, it is by the blood that the worn-out, burnt, and now useless materials are removed from the organs and thrown out of the body.

"*Different functions of Food.*—Hitherto we have assumed, for the sake of simplicity, that the whole heat of the body is derived from the combustion of the living organs of the body, and, as a consequence, that all the food, after it is converted into blood, is absorbed by and becomes a part of those organs. But this is not really the case, and we are therefore led to take another step onward in our inquiry. The new step will involve a little additional labor of thought, but it is well worth the effort, for it is absolutely necessary if we wish to attain an accurate and scientific knowledge of the nature of food. It has been found that the heat produced by the burning of the organs of the body, is only a small part of the whole heat of the body. The rest of the heat is produced by the *direct combustion of the blood itself.* So that although all the useful food is converted into blood, only a portion of that blood is employed in repairing the muscles and other organs of the body.

"We are thus led to perceive that there are two different uses to which the food which is eaten and converted into blood, has to minister. The first is the repair of the organs, and the second the direct production of heat in the blood. And it is a very singular and interesting fact, that side by side with this distinction between the *offices* of food, there is an equally well marked distinction between the *qualities* ot different kinds of food. Some of the most important constituents of food are utterly different in composition ftom the solid organs of the body. They cannot, under any circumstances, be employed in the body for the repairing of those organs. They are only valuable for the heat they produce when they are burnt in the blood; in other words, they are mere fuel. Food of this kind is conveniently described as *heat-producing food.*

"On the other hand, there is another great class of food-ingredients, which consists of articles almost identical in composition with the organs which have to be repaired. Let us, for the sake of simplicity, confine our attention to those very important organs, the muscles, which constitute what is generally called the flesh of the animal. A large portion of all food has almost exactly the same chemical composition as flesh. It cannot be doubted that the main purpose of food of this kind is to form flesh, and it is therefore known as *flesh-forming food.* Nevertheless, it is important to remember that this term does not convey the whole truth in regard to this kind of food. For some part of the so-called flesh-forming food does not become converted into flesh, but is burnt in the blood, like the heat-food. And even that part of it which does become flesh is afterwards, as we before explained, wasted away and burnt, so that although heat-food can never act as flesh-food, flesh-food can, and does act as heat-food. Dr. Savory fed some rats for a considerable time entirely on flesh-forming food, and he found that they remained in good health and retained their ordinary heat; but this experiment, though very interesting as illustrating the double office of flesh-food, must not be understood as proving that heat-food may be dispensed with, for most animals would suffer very seriously upon such a diet, and require a properly balanced proportion of the two kinds of food.

" *Work done by the Body.*—There is yet another aspect of this subject which must not be left unnoticed. The body is not only a producer of heat—it is a very powerful engine. The muscles of the body are in reality, machines for doing work. And the work they do is much greater than most people have any idea of. A strong man can easily do in a day as much work as though he lifted three hundred and fifty tons a foot high. The heart itself, the most powerful and the most untiring of the muscles, pumps out the blood which passes into it with a force which appears almost incredible. At every beat it throws out five or six ounces of blood, and in twenty-four hours from fourteen to nineteen tons! The force required to do this would lift fourteen sacks of coals to the top of the Monument at London Bridge.

"The whole of this enormous daily work is done at the expense of the food consumed, as certainly as the work done by a steam-engine is done at the expense of the coals burnt in the boiler-fire. And it appears probable that the parallel is still closer, for as in the steam-engine the work is done, not by the coals, but by the heat produced from the coals, so the work of the animal body is done by means of the heat developed in it, and the whole of this heat, as we have already seen, comes ultimately from the food.

"It was, until lately, believed that all the work of the body was done by the burning of the muscles themselves. If this were true, it is evident that flesh-forming food would be the only kind which would be of any use for the doing of work. But this has been clearly shown to be a mistake and it is now hold to be highly probable that both kinds of food, inasmuch as they both produce heat in the body, are alike serviceable for the doing of work. The practical importance of the question will be perceived at once. Men who do hard work eat more than others, and unless they know the right kind of food to eat, it is obviously possible that they may be cramming themselves with large quantities of food which is of little or no real use to them.

"*Classification of Food.*—We may now attempt to form a classification of the constituents of food, which, without pretending to purely scientific completeness, shall yet be sufficient for the practical purposes which we have in view. It is very difficult to frame a thoroughly satisfactory definition of food. Perhaps the simplest is that which includes under it, everything which is assimilated in the body, and which is necessary or useful to it. Taken in this wide sense, the term must be applied to some substances which are not generally reckoned under it. Water for instance, common salt, and, even medicine, must in this view be regarded as food, and, in accordance with it, we will divide the materials of food into the four following heads:

1. Flesh-formers.
2. Heat-givers.
3. Mineral food.
4. Stimulants, spices, flavors, &c.

"The two last of these may be dismissed for the present with very few remarks. The mineral substance called phosphate of lime is an essential ingredient of food, because the bones of animals consist chiefly of it. All the most important articles of food contain it. Our fourth head is of necessity very vague. Under it we include alcohol, tea, coffee, spices, essences, and many other things which are useless, or nearly so, for the actual nourishment of the body, but which in many cases have a high special value of their own. The first two heads require a somewhat closer examination.

"*Flesh-formers.*—The solid part of the flesh of all animals consist chiefly of a substance called *fibrin.* Fibrin stands naturally at the head of the list of flesh-formers, for nothing could be more suitable for the repair of the flesh than flesh itself. *Albumin*, which is found in the juice of flesh, in the white of egg, and in the blood, is another flesh-former, very similar to fibrin in composition and properties. It is equal to fibrin as a flesh-former, and as it is soluble in water in its natural condition, it is more easy of digestion. It has, however, the curious power of becoming insoluble when boiled. White of egg consists almost entirely of albumin, and every one knows how entirely it is altered by a few minutes' exposure to the heat of boiling water. Milk contains a third important flesh-former called *Casein* It forms the curd of milk and constitutes the greater portion of cheese

"These three substances, almost identical in composition with one another, and with the flesh, are the most important animal flesh-formers. But it has been found that compounds very similar both in composition and properties occur in those vegetables which are used as food. If a little flour be tied up in a small linen bag and squeezed under water with the fingers for some minutes, a fine white powder, called starch, is squeezed out and a sticky mass is left behind, well known as bird-lime. This is called *gluten.* It is a very important and valuable flesh-former. Lastly, peas, beans, and some other vegetable substances contain a compound called *legumin* which is similar to, some say identical with, casein in composition and properties, and we have therefore in the most important articles of food five distinct, though very similar, flesh-formers.

"*Heat-producers.*—The substances which are exclusively destined for the maintenance of the animal heat, and thereby to the production of work, are more numerous than the flesh-formers, with the exception of gelatin, of which we shall speak presently, and their chemical composition is much better understood. Leaving gelatin out of the question for the present, they may be roughly divided into the three following classes:—

1. Fats and oils.
2. Starches and gums.
3. Sugars.

"Fats and oils form a very well-marked and important class. They are found both in animal and vegetable foods, and differ but slightly in composition in all cases. The most important examples among animal food are the fat of butchers' meat, the suet, lard, and dripping which are obtained from it, and butter, which in the form of cream is one of the most valuable ingredients of milk. Most of the staple articles of vegetable food contain a greater or less proportion of fat or oil, and they are, in particular, found in all seeds.

"Starches and sugars are mainly derived from the vegetable kingdom, though examples of both occur in the animal body. They all have about the same composition, and although they contribute largely to the heat of the body, they are not as valuable, considered merely as fuel, as the fats and oils, which, give out more heat in their burning than an equal weight of any other article of food.

"Another common constituent of food is known as *gelatin.* It occupies a somewhat ambiguous position in our classification. It can only be obtained from certain animal substances, and does not exist ready-formed even in them. When the tendons, skin, and similar parts of animals are boiled for a length of time in water, they gradually become soluble and then constitute gelatin. Bones behave in a similar manner, but the mineral matter remains behind unchanged. Glue and size are prepared in this way from the hides or animals. They consist of somewhat impure gelatin. Isinglass is nearly pure gelatin, and it is found in a less pure state in calves' feet jelly, and in the substance which is solid under the name of gelatin in the shops.

"Gelatin is so like the flesh-formers in composition that we should naturally be inclined to class it among them; and it is almost always considered by persons ignorant of science as a nutritious and valuable food. But it appears to be clearly certain that it has no value whatever *as a flesh-former*, and it must, therefore, be classed amongst the heat-givers. This fact is of greater practical importance than we should at first sight imagine. How often do people judge of the quality of soup or broth by the stiffness of the jelly which it forms on cooling. The test is utterly fallacious, because the stiffness is entirely due to gelatin. It is very easy to make the poorest soup set to a firm jelly by merely adding to it a little isinglass. One pound or gelatin will convert ten gallons of water into jelly, but this jelly has very little value as food, and is utterly useless for the production of flesh.

The daily amount of food necessary to be taken by a person in good health, varies with the kind and amount of labor to be performed. Experience proves that the more laborious the labor performed the greater the amount of food required to supply the waste of the tissues resulting from exertion. Muscular exertion requires food that contains nitrogen, while mental labor, which (wears away the tissues of the brain, and nervous system) require food in which the phosphates are most abundant.

"Experiments have been made to ascertain the smallest quantity of food required by a man to sustain life. It was found that, while he remained at rest, the weight of bread required to keep up the circulation and respiration during twenty-four hours, no other food being taken, was a little less than six and one fourth ounces; but that when potatoes only were taken, the man required nearly thirteen and one half ounces during the same period. When, for this purpose, apples were employed, one pound four and three fourths ounces were needed; when oatmeal was taken as the only food, a little less than three and one half ounces had to be used. It was also found that whenever gelatine, cheese, lump sugar, flour, peameal, ground rice, or arrowroot were employed, that the man required about the same quantity that he did when he lived on oatmeal. When vegetables were tried, it was discovered that a man required about thir ty-six and three fourths ounces of cabbage for sustaining life; of carrots twenty and one half ounces were needed. When fish was employed in these experiments, it was found that sixteen ounces of whiting were only equivalent to eight ounces of mackerel. The quantity of butter required to keep up the circulation for the twenty-four hours, was a little more than one and three fourths ounces; and when cocoa-nuts were used, about the same quantity was requisite. With regard to meat, a little more than nine and a half ounces were required, when lean beef was used; while of lean boiled ham, only seven and nine tenths ounces were needed. When lean veal, however, was used, eleven ounces and four tenths were necessary.

Let us first consider the average quantity of liquid, solid, and gaseous substances consumed in twenty-four hours by a healthy man weighing eleven stone, or one hundred and fifty-four pounds. Now first with regard to the air he breathes: it is found that by respiration during that period he removes from the air as much as twenty-four ounces by weight of oxygen gas. Perhaps a better idea of the bulk of this substance will be obtained, if we mention that it would fill a measure six inches square eighty times, or ten cubic feet. With reference to water, he consumes the average quantity of sixty-eight ounces in the shape of beverages; and in addition, twenty-five ounces in his meat, vegetables, and bread; seven ounces in sugar and starch, and three ounces and two hundred and eighty-seven grains in flesh-forming substances. Of solid flesh-forming substances he takes three ounces of dry fibrine and three hundred grains of dry albumen in his bread, meat, and vegetables; and also one hundred and thirty-seven grains of caseine in his milk and cheese. Of heat-giving substances he consumes twelve ounces of dry starch in his bread, vegetables, &c., four ounces of fat in his meat, and one ounce of butter either on bread, or in pastry. The accessories he takes are gelatine one ounce, in meat; and the same quantity of cellulose, in bread, potatoes, &c.

"The mineral matters taken either with, or in the food, are, common salt, one hundred and eighty grains; phosphates of lime, soda, and potash, one hundred and twenty-eight grains; and various other salts, one hundred and twenty-nine grains."

There is an old maxim, "A place for everything, and everything in its place." To which we beg to add another, "A season for everything and everything in season." Here is a list of articles comprising seasonable food for the different periods of the year.

JANUARY.

Fish. Cod, crabs, eels, flounders, herrings, lobsters, oysters, perch, pike, sturgeon, porgies.

Meat. Beef, house-lamb, mutton, pork, veal, and doe venison.

Poultry and Game. Capons, chickens, ducks, wild-ducks, fowls, geese, partridges pheasants, pigeons (tame), pullets, rabbits, snipes turkeys (hen), woodcocks.

Vegetables. Beet, sprouts, cabbage, cardoons, carrots, celery onions, parsnips, potatoes, turnips.

Fruit. Almonds, apples.

FEBRUARY.

Fish. Cod, crabs, flounders, herrings, oysters, perch, pike, sturgeon, porgies.

Meat. Beef, house-lamb, mutton, pork, veal.

Poultry and Game. Capons, chickens, ducklings, fowl (wild), green geese, partridges, pheasants, pigeons, (tame and wild), pullets, rabbits, snipes, turkeys, woodcocks.

Vegetables. Beet, cabbage, carrots, celery, mushrooms, onions, parsnips, potatoes, turnips.

Fruit. Apples, chesnuts, oranges.

MARCH.

Fish. Eels, crabs, flounders, lobsters, mackerel, oysters, perch pike, shrimps, smelts, sturgeon, porgies.

Meat. Beef, house-lamb, mutton, pork, veal.

Poultry and Game. Capons, chickens, ducklings, geese, pigeons, rabbits, snipes, turkeys, woodcocks.

Vegetables, Beet, carrots, celery, cresses, onions, parsnips, potatoes, turnip-tops.

Fruit. Apples, chesnuts, oranges.

APRIL.

Fish. Shad, cod, crabs, eels, flounders, halibut, herrings, lobsters, mackerel, oysters, perch, pike, salmon, shrimps, smelts, sturgeon, trout, porgies.

Meat. Beef, house-lamb, mutton, pork, veal.

Poultry and Game. Chickens, ducklings, fowls, green-geese, leverets, pigeons, pullets, rabits, turkey-poults, wood-pigeons.

Vegetables Onions, parsnips, spinach, small salad, turnip tops, and rhubarb.

Fruit. Apples, nuts, oranges, pears.

MAY.

Fish. Shad, cod, crabs, eels, flounders, halibut, herring, lobsters, mackerel, mullet, perch, pike, salmon, shrimps, smelts, sturgeon, trout, clams.

Meat. Beef, grass-lamb, house-lamb, mutton, pork, veal.

Poultry and Game. Chickens, fowls, green geese, pigeons, pullets, rabbits.

Vegetables. Artichokes, green peas, asparagus, kidney-beans, cabbage, carrots, onions, peas, potatoes, radishes, rhubarb, salad, spinach turnips.

Fruit. Apples, pears.

JUNE.

Fish. Cod, shad, crabs, eels, flounders, herrings, lobsters, mackerel, perch, pike, salmon, clams, smelts, sturgeon, trout, clams, cat-fish, black-fish.

Meat. Beef, grass-lamb, mutton, pork, veal.

Poultry and Game. Chickens, ducklings, fowls, green-geese, pigeons, pullets, rabbits.

Vegetables. Asparagus, beans, white beet, cabbage, carrots, cucumbers, leeks, lettuce, onions, parsley, peas, potatoes, radishes, salad of all sort, spinach, turnips.

Fruit. Apples, apricots, cherries, currants, gooseberries, melons, pears, strawberries.

JULY.

Fish. Cod, crabs, flounders, herrings, lobsters, mackerel, perch, pike, salmon, trout, blue fish, black fish, bass, pickerel, cat-fish, eels, clams, porgies.

Meat. Beef, grass-lamb, mutton, veal, buck-venison.

Poultry and Game. Chickens, ducks, fowls, green geese, leverets, pigeons, plovers, rabbits, wild pigeons.

Vegetables. Artichokes, asparagus, balm, beans, carrots, cauliflowers, celery, cucumbers, herbs of all sorts, lettuces, mint, mushrooms, peas, potatoes, radishes, salads of all sorts, turnips, tomatoes. Carolina potatoes.

For Drying. Mushrooms.

For Pickling. French beans, red cabbage, cauliflowers, garlic, onions.

Fruit. Apples, apricots, cherries, currants, damsons, gooseberries, melons, nectarines, peaches, pears, oranges, pine-apples, plums, raspberries, strawberries.

AUGUST.

Fish Cod, eels, crabs, flounders, herrings, lobsters, mackerel, perch, pike, salmon, blue fish, black fish, week fish, sheep's head, trout, porgies, clams.

Meat. Beef, grass-lamb, mutton, veal, buck-venison.

Poultry and Game. Chickens, ducks, fowls, green geese, plovers, rabbits, wild ducks, wild pigeons, red-bird, curlew.

Vegetables. Artichokes, beans, white-beet, carrots, cauliflowers, cucumbers, pot-herbs of all sorts, leeks, lettuces, mushrooms, onions, peas, potatoes, radishes, salad of all sorts, spinach, turnips, tomatoes.

For Drying. Basil, sage, thyme.

For Pickling. Red cabbage, tomatoes, walnuts.

Fruit Apple (summer pippin), cherries, currants, damsons, gooseberries, grapes, melons, mulberries, nectarines, peaches, plums (green gages), raspberries.

SEPTEMBER.

Fish. Cockles, cod, crabs, eels, flounders, lobsters, oysters, perch, pike, shrimps, porgies, black fish, week fish.

Meat. Beef, mutton, pork, veal, buck-venison.

Poultry and Game. Chickens, ducks, fowls, green geese, partridges, pigeons, plovers, rabbits, turkeys, wild rabbits, quail.

Vegetables. Artichokes, beans, cabbages, carrots, cauliflowers, celery, cucumbers, herbs of all sorts, leeks, lettuces, mushrooms, onions, parsnips, peas, potatoes, radishes, salad of all sorts, turnips, tomatoes, Carolina potatoes.

Fruit. Apples, damsons, grapes, hazel-nuts, medlars, peaches pears, pine-apples, plums, quinces, strawberries, walnuts.

OCTOBER.

Fish. Cockle, cod, crabs, eels, gudgeons, halibut, lobsters, mussels, oysters, perch, pike, salmon-trout, shrimps, smelts, porgies.

Meat. Beef, mutton, pork, veal, doe-venison.

Poultry and Game. Chickens, ducks, fowls, green geese, larks, partridges, pheasants, pigeons, red-bird, black-bird, robins, snipes, turkey, wild ducks, wild pigeons, wild rabbits, woodcocks, teal.

Vegetables Artichokes, cabbages, cauliflowers, celery, herbs of all kinds, onions, parsnips, peas, potatoes, radishes, salad, spinach (winter), tomatoes, turnips, Carolina potatoes.

Fruit. Almonds, apples, black and white damsons, hazel-nuts, grapes, peaches, pears, quinces, walnuts.

NOVEMBER.

Fish. Cockles, cod, crabs, eels, gudgeons, halibut, lobsters, mussels, oysters, perch, pike, salmon, shrimps, smelts, porgies, flounders, rob.

Meat. Beef, house-lamb, mutton, pork, veal, doe-venison.

Poultry and Game. Chickens, ducks, fowls, geese, larks, partridges, pheasants, pigeons, rabbits, snipes, turkey, wild ducks, woodcocks, robins.

Vegetables. Beets, cabbages, carrots, celery, herbs of all sorts, lettuces, onions, parsnips, potatoes, salad, spinach, tomatoes, turnips.

Fruit. Almonds, apples, chesnuts, hazel nuts, grapes, pears.

DECEMBER.

Fish. Cod, crabs, eels, gudeons, halibut, lobsters, oysters, perch, pike, salmon, shrimps, smelts, sturgeon.

Meat. Beef, house-lamb, mutton, pork, veal, doe-venison.

Poultry and Game. Capons, chickens, ducks, fowls, geese, guinea-fowl, hares, larks, partridges, pea-fowl, pheasants, pigeons, rabbits, snipes, turkey, wild-ducks, woodcocks.

Vegetables. Beets, cabbages, carrots, herbs of all sorts, lettuces, onions, parsnips, potatoes, salad, spinach, turnips.

Fruit. Apples, chestnuts, hazelnuts.

LIFE INSURANCE.

With almost every person there is more or less anxiety in regard to the future; and this is particularly the case with parents, whose worldly circumstances prevent their making adequate pecuniary provision for their children or other survivors in case of death. It may also be regarded as true with reference to the very large number of persons who are liable to pass their whole lives in what may be termed moderate circumstances; who on account of the nature of their employment, on account of the current expenses of living, and in many cases by reason of improvident habits are barred from any considerable accumulations of money or property. To all such, life insurance affords a ready and comparatively cheap and secure mode of providing for the future. Of its principal uses we may mention the following:

To provide a competency for surviving parent and children, in case of death of father or mother.

To secure the prompt payment of all personal liabilities that may exist against the policy-holder at death.

To secure the payment of a mortgage on a man's homestead, and thus release the home of his widow and children from incumbrance in case of his death.

And, in general, to guard by a life policy any pecuniary interest that any party or parties may have in the life of the policy-holder.

In life insurance the company agrees, for a specified premium paid annually, semi-annually or quarterly, to pay, on the death of the policy-holder, a certain sum of money to his heirs or legal representatives. In order to keep alive the obligation of the company to pay this sum, it is indispensable on the part of the policy-holder, to pay regularly his premiums according to the terms of his policy. In the ordinary life policy, these payments are to be made during his whole life; unless he stipulates to pay the full amount of the premium-money in a limited number of annual payments — say in five, ten, or twenty. By this mode, when the payments are made and the time is terminated he has no further trouble with payments nor is his insurance endangered by the chances of allowing his policy to lapse, as is the case with payments that cover the whole period of his life. For persons with limited means, however, this mode is inconvenient, if not impracticable on account of the larger sum required at each payment.

To illustrate our meaning, assume the gross or office premium to be at age 35, $26.50 annually during life, for $1000 insurance. If the policy-holder should prefer to secure this amount of insurance by means of the payment of five annual premiums instead of the life premium, the amount of each payment would be $82.40; if in ten annual premiums each payment would be $54.82. If he should be in circumstances to pay his insurance premiums at a single payment, that payment would be $357.63. It will be seen that the whole life annual premium is ($26.60) is much the more convenient for persons of moderate income.

If the person seeking insurance does not wish to take the chances of keeping up his life policy by annual payments during life, or if he is not able to take the limited payment plan above described, he may take a Term Policy for a limited number of years; in which case the sum insured is payable only in case of his death during that period. He will, however, bear in mind that by the time his term of years is ended he will be older and may be so disabled physically, as to be unable to secure life insurance in any company; for all well-conducted companies are constantly on their guard against the admission of unsound risks. If, however, he be able to pass a satisfactory medical examination he can renew his insurance for an additional term, paying only the increased mortality rate consequent upon his advancement in years.

With some persons an endowment policy is thought to be desirable. In this case. the sum insured is payable when the policy-holder attains a certain age or at death if it should take place before that time. This form of insurance is in the nature of an investment and insurance combined. As an investment not much can be said in its favor.

In choosing a company in which to insure, regard should be had to its financial standing as exhibited in its statements to the insurance departments. to its general reputation in the conduct of its business, and above all to the character and financial responsibility of its officers. They should be known as honorable, fair-dealing men, industrious and prompt in business and imbued with a spirit of economy, and thoroughly up with the times in all matters pertaining to life insurance.

A person contemplating life insurance should understand and carefully weigh the chances of being able to carry his life policy when once it has been taken. He should bear in mind that the lapsing of policies is one of the greatest evils attendant upon the system of life insurance.

If he take life insurance at all, he should firmly resolve that he will above all other duties carry his life-policy. He owes this to those or whose benefit he is insured; and moreover, he owes it to the cause of life insurance, of which he is a living exponent. In taking life insurance his primary idea should be that he insures for the benefit of his family and not to make money for himself, for, sooner or later he will learn that carrying a life policy is in no sense a money-making business for himself; but, on the contrary, is an additional burden of expense which he cheerfully assumes for the sake of those dependent upon him. We speak thus plainly because we believe the cause of life insurance has been injured to a fearful extent by a want of sincerity with regard to its true nature and mission, and the relation in which policy-holders stand to it. Rightly understood and rightly used it is an institution that should hold an important place in social science.

"Experience" (we quote from a public journal,) "teaches us that the tenure of a man's property is much more precarious than the tenure of his life. And, although he may openly deny this fact, he tacitly recognizes it when he guards his property against daily hazards more carefully than he guards his life against daily exposures. Every commercial business is forever fluctuating between failure and success. On these fluctuations all values rise and fall, and thus wealth is acquired and lost. In each succeeding year prosperous copartnerships are broken up by disaster, names of mercantile men, of flankers and traders alike, rise into the notoriety of wealth, and then suddenly disappear and are forgotten.

'Their riches are like poppies spread—
You seize the flower, its bloom is shed;
Or, like the snow-fall in the river—
A moment white, then melts forever.'

"The comedy that is thus played in our day is the old comedy that has been repeated in every generation. This is the same demand of social life leading us to live beyond our means, to do those things which we ought not to do, because we fear that if we do otherwise we may not be rated as good, as respectable, or as wealthy as our neighbor. There are the same demands of business life—the concealed struggle to maintain credit or overcome competition, the necessity to labor and contrive and circumvent, in order to attain to that pomp and circumstance of wealth in which others are making themselves glorious for a brief time."

FIRE INSURANCE.

The business of fire insurance is so well understood, there are so many solid and reliable companies, doing business under well-guarded laws in different states, and the principle of paying only what the actual risk is worth is so well carried into effect by some companies that no one is excusable for neglecting to protect himself, his family and his creditors from loss by fire.

In taking out a policy of insurance, soundness and reliability of a company is the first consideration. Be sure, before the policy is written that you select a company which is in every way worthy of confidence. It will not do to trust always to the representations of solicitors. If you do not have the means of ascertaining the facts about a company in which it may be convenient for you to insure your house, household goods, or other perishable property, ask the advice of some trustworthy friend who can probably give you the desired information. At all events, get into a good company, for when you pay for indemuity you want to be certain that if your property burns, you will get the insurance. People are very often too remiss about this primary matter when insuring their property, and the result frequently shows the folly of such short-sightedness.

A prudent man will be careful to guard against the possibility of fire. He will take precautions against such a calamity and watch vigilantly to see that any carelessness on the part of those constituting his household does not endanger his property; he will see that wood work is protected from chimneys, stoves, pipes, etc.; he will take care that his policy is not invalidated either by acts of omission or commission; in short he will post himself thoroughly in this matter, and in case of accident he will have little or no difficulty in making satisfactory proof of loss and getting his insurance, ***provided he is insured in a good, reliable company.***

In building houses it is economy to make them as near fire-proof as circumstances will permit. The nearer that buildings are made fire-proof the lower the rate of insurance, and besides there is a feeling of security in such a dwelling, or other buildings which is not felt in one that is not fire-proof.

In taking out an insurance policy the insured signs a formal application and answers therein many questions; the class of property is specially noted, and the substantial truth of every answer would be taken as a condition precedent to any liability on the part of the insurers. If the insured proposes to make alterations in the premises insured, he should make this known to the insurers, and obtain their leave in writing, else should a fire occur while such alterations were being being made, especially if the risk was thereby substantially increased, the policy might be declared void.

There are many intricate questions connected with the liability of insurance companies in case of fire under many and varied circuminstances. The courts are constantly called upon to decide upon questions growing out of insurance, and while many points have been settled in this branch of jurisprudence, others are arising from time to time. The policy under which insurance is taken out, should be well understood by the insured, and the insured should be careful to comply with all its requirements. In this way vexatious delays in the settlement of losses, as well as expensive litigation will often be avoided

HOW TO PAINT.

Paint preserves wood and keeps it from warping, besides being pleasing to the sight. An amateur, by acquiring a moderate knowledge of the art, may easily save the cost of the labor required in painting his dwelling, outside and in, as well as the expense of employing professional painters in many little jobs where paint is necessary or desirable. The branch of the art we are now considering is the painting of wood, and in the first place it is well to call attention to the great difference in the qualities of painters' goods, and the variation in prices of different qualities. It will be found upon inquiry that the prices of professional painters often widely vary for the same amount of work, and the difference is accounted for by the difference in the cost of materials used. Among the devices employed to cheapen paint are the mixing of whitening with common white lead; the use of inferior oil in mixing paint, and very little turpentine; the mixing of common colors to assimilate the more costly ones, and the use of poor qualities of varnish.

The safest way is to purchase colors of a reliable house, buy good qualities, and mix them yourself.

The number of coats of paint to be given, depends upon the kind of wood, the quality of the paint, and the finish desired. In most cases three coats are best, (though generally only two are put on) and the flatting or finishing coat may be taken as an average sufficiency for plain painting of new wood. When imitation of woods is intended four coats are usually required for the ground work. The following directions for painting white are taken from an English work:

Directions for painting in White.—Having applied to the knots with a brush, a preparation of lead-powder (red is the most general) ground in water, and mixed with strong glue size, while quite warm, which should be heated in an iron vessel, stop with putty the indents of the nail heads and any cracks or blemishes which sometimes occur in the wood generally at the knots. This being done, the next thing will be to apply the priming or first coat of paint, which should consist of white and red-lead, mixed or ground with linseed oil, using as driers patent driers, or litharge and a little burnt white vitrol, well ground in turpentine, thinned to the consistency of rather thin paint with boiled oil. It is a judicious practice to strain the paint before using, through a coarse canvas, in order to keep out any small pieces of driers which may have escaped grinding, or any extraneous matter that may accidentally have found its way into the paint. It must be borne in mind that to effect good painting considerable time as well as exertion is requisite. The paint should be so well beaten into the wood before smoothing that the arm of the novice at such work will at first ache; but if the paint is simply laid on without this exertion, it will not properly adhere to the wood; and, while drying, will run in small patches, and appear like a greasy surface. Panels or large surfaces should be painted first and when the paint has been well beaten in, the whole should be carefully smoothed down (quite straightly) with a flat or broad brush, using a small brush to smooth the beginnings and the endings, which must be in a cross direction, but afterwards blended in with a light touch, so done, as to leave the cross-grain of the painting scarcely perceptible, which, under such circumstances, will disappear in drying. It is impossible to state the exact time that should be allowed for painting to dry sufficiently to receive the next coat, as that depends on the state of the atmosphere, the quantity of driers employed, and the temperature of the air kept up in the apartment or room. Under any circumstances, however, the first coat ought to stand a few days before the application of the second. While speaking on this subject, it will be as well to observe that the second coat should stand a little longer than the first before the application of the third, and so forth for any number of coats, excepting the one immediately preceding the flatting or finishing coat, which ought not to stand above two days, as much of the beauty and solidity of the work will depend on the latter drying into and blending with the former. The priming being quite hard and dry, it should be well dusted, and the surface rubbed smooth with glass-paper. This being done, you may proceed with the second coat. Having mixed the white-lead in raw linseed oil, thin with equal quantities of oil and turpentine, but to a consistency considerably thicker than the priming, using as driers litharge or patent driers, but only half as much as used for the priming. Be particular in straining, that no dirt or bits of the driers remain in the paint, as that will render the surface rough, and spoil the appearance and gloss of the work. If the work is intended for a third coat before the flatting, the color will be sufficiently good; but if not, the addition of a little lamp-black or Prussian blue will much improve the appearance of the paint, as it will free it from the yellow cast of the oil. The third coat, if the work is intended for a flatting, will be precisely the same as the second, but adding the lamp-black or Prussian blue. Too great care cannot be taken to prevent dust from settling upon the paint while wet, as this will not only spoil the color and appearance of the work, but render it rough and coarse. If the work is out-doors, calm weather, free from rain, should be selected; but if in-doors, a sufficient current of air may be created for drying the paint and clearing the smell by leaving the blinds drawn down before an open window.

We now proceed to give directions for the flatting or finishing coat of paint. The white-lead should be mixed to a stiff consistency with linseed oil, and rendered quite thin by the addition of spirits of turpentine, using no driers, as the turpentine will dry quite fast enough, and requires dexterity of the workman in laying on the paint to prevent it drying before the surface is nicely levelled. It is desirable, too, that the doors be kept closed for a short time to prevent the uneven and too rapid action of such drying. The addition of a little lamp-black or Prussian blue should not be omitted, as it greatly tends to increase the perfection of the color. Great care must be taken to ensure the lamp-black or Prussian-blue being exceedingly fine, as bits passing through the canvas strainer (although very small) melt and suffice to stain the paint with the pressure of the brush. If a slight gloss, which is preferable for upstairs work, is required, the paint should be mixed in a similar way, only using more linseed oil in the mixing of the white-lead. Should it be required to re-paint, the work should be well rubbed with glass-paper, and if necessary, with fine pumice-stone, afterwards clearing it off with canvas. If, however, the work be dirty, it must be first scrubbed with soap and water, and when quite dry prepared as usual. In some cases, where bad oil paint has been used, it is necessary to scrape it with the painter's knife before adopting the usual process, but this never occurs excepting in common work. In the cases of blistered work, or where the surface of the old coats of paint is rough and uneven, the best means is to clean off the old paint, to effect which mechanical scraping is very generally resorted to, or the method of washing over the work with oil of turpentine, and burning off the old painted surface. This is a dangerous operation, and may be well replaced by a safe and much more easy plan, namely, spreading a thick paste of fresh slacked quick-lime, mixed with soda, over the whole surface of the work, which will displace all the paint and dirt, and when the work is washed the following day, it will be left quite bare, and may be treated as fresh work.

Green Paint for Garden Purposes.— Nothing is of greater importance to the setting off of a country or suburban residence than the appearance of the verandahs, the trellis-work, and the garden-stands. To keep them in perfect condition, they should be painted every spring, and they fully repay both the trouble and expense of doing them in the way which we will describe. Having washed them quite clean from all dust and dirt, choose a clear day, when they are perfectly dry and use for the first coat the following mixture:—White-lead and mineral green ground in turpentine, with the addition of a small quantity of turpentine varnish. When the first coat is quite dry, use the following for a second coat:—The same mixture as before, but using as much turpentine varnish as will give a good gloss; and if a brighter color be desired, adding a small quantity of Prussian blue, which, in our opinion, greatly improves the beauty of the color. With regard to the making of the varnish, it may be done in the following manner:—viz., by adding a little more than a pound weight of rosin, which should be pounded, to every quart of turpentine, and letting it boil for about half an hour on a hot stove, or in an oven with the door open. But we must warn our readers of the danger of making most varnishes, as unless done in a perfectly scientific manner, they are likely to take fire, and for this reason it is customary to make varnishes in a fire-proof building or apartment, and therefore we would suggest purchasing the varnish as the safest and best plan for small consumers.

Painting to imitate Fancy Woods.—The imitation of woods and marbles has now been brought to such perfection, that in some cases—as for instance, the imitation of oak—where the real and the imitation are placed side by side, it is scarcely possible to distinguish the imitation from the reality, and indeed, even after examination. Imitations of marble have, in some instances, been brought to almost equally great perfection, although the art of imitating oak has received the greatest attention.

RECIPES FOR PAINTS, WASHES, STUCCO, ETC.

1. ***Paints for Outside Work.*** The following recipes for mixing several desirable colors are from Wheeler's "Homes for the People:"

1. A cool gray, similar to what would be the tint of unpainted timber after a few years, may be obtained as follows: Indian red, half a pound; Lampblack, three ounces; Raw umber, half a pound; White lead, one hundred pounds.

This color will be changed by the addition of sand, which in all cases is recommended, in a proportion of about one quart to every one hundred pounds of mixed color. The finest and whitest sand that the neighborhood affords should be used, and as its hue differs, so will the tint of the paint be changed.

This color, with one third less white, is very suitable for roofs, and is a cool, unreflecting gray tint of great softness and beauty.

2. A soft, pleasant tint, like that of coffee greatly diluted with milk, is oftentimes well adapted to a building, particularly in regions where red sandstone or other similar objects, with such local coloring, give a brown hue to portions of the landscape.

It may be mixed as follows: Yellow ochre, five pounds; Burnt umber, half a pound; Indian red, quarter of a pound; Chrome yellow, No. 1, half a pound, with one hundred pounds of white lead.

The key-notes in this color are the Indian red and the chrome yellow, and the tone may be heightened or lowered by more or less of either, as individual taste may prefer.

3. A still more delicate tint, resembling the pure color of the Caen stone, and well adapted for a large building with many beaks of outlines, may be mixed thus: Yellow ochre, two pounds; Vandyke brown, quarter of a pound; Indian red, quarter of a pound; Chrome yellow, No. 1, half a pound to every one hundred pounds of lead.

The following cheap and excellent paint for cottages is recommended by Downing. It forms a hard surface, and is far more durable than common paint. It will be found preferable to common paint for picturesque country houses of all kinds.

Take freshly-burned unslaked lime and reduce it to powder. To one peck or one bushel of this add the same quantity of fine white sand or fine coal ashes, and twice as much fresh wood ashes, all these being sifted through a fine sieve. They should then be thoroughly mixed together while dry. Afterward mix them with as much common linseed oil as will make the whole thin enough to work freely with a painter's brush.

This will make a paint of a light gray stone color, nearly white.

To make it fawn or drab, add yellow ochre and Indian red; if drab is desired, add burnt umber, Indian red, and a little black; if dark stone color, add lampblack; or if brown stone, then add Spanish brown. All these colors should of course be first mixed in oil and then added

This paint is very much cheaper than common oil paint. It is equally well suited to wood, brick, or stone. It is better to apply it in two coats; the first thin, the second thick.

2. *A Cheap Wash.*—For the outside of wooden cottages, barns

out-buildings, fences, etc., where economy must be consulted, the following wash is recommended:

Take a clean barrel that will hold water. Put into it half a bushel of quick-lime, and slake it by pouring over it boiling water sufficient to cover it four or five inches deep, and stirring it until slaked. When quite slaked dissolve it in water, and add two pounds of sulphate of zinc and one of common salt, which may be had at any of the druggists, and which in a few days will cause the whitewash to harden on the woodwork. Add sufficient water to bring it to the consistency of thick whitewash.

To make the above wash of a pleasant cream color, add three pounds of yellow ochre.

For fawn color, add four pounds of umber, one pound of Indian red, and one pound of lampblack.

For gray or stone color, add four pounds of raw umber and two pounds of lampblack.

The color may be put on with a common whitewash brush, and will be found much more durable than common whitewash.

For a wash for barns the *Horticulturist* also gives this:

Hydraulic cement, one peck; freshly slaked lime, one peck; yellow ochre (in powder) four pounds; burnt umber, four pounds; the whole to be "dissolved" in hot water, and applied with a brush.

3. *Staining Interior Wood Work.*—One of the simplest and best modes of staining pine or other soft wood is the following as given by Downing:

First prepare the wood by washing it with a solution of sulphuric acid, made by mixing it in the proportion of one ounce of sulphuric acid to a pint of warm water. It should be mixed when wanted and put on while warm, washing it evenly over every part to be stained.

Second, stain the wood so prepared by rubbing it lightly with tobacco stain, using a piece of flannel or sponge for this purpose. By merely coating it evenly in this way the natural grain of the wood will assume a dark tone, so as to resemble black walnut or oak; the effect of certain parts may be heightened by a little skill in mottling or slightly graining the wood, by repeating the coat and allowing it to settle in places.

When the stained wood is entirely dry, brush it over, in order to preserve it, with the following mixture: half a pound of beeswax, half a pint of linseed oil, and one pint of boiled linseed oil.

It may, if desired, afterward be varnished and polished. To make the above tobacco stain, take six pounds of common shag or "negro head" tobacco; boil it in as many quarts of water as will cover the tobacco, letting it simmer away slowly till it is of the consistence of syrup. Strain it, and it is ready for use.

We may add, that when it is desired to give the wood the tone of light oak or maple, the solution of sulphuric acid should be much weaker, and only a light coat of the stain should be used. Where a dark tone is preferred, two coats of the stain should be put on.

4. *Stucco and Stuccoing.*—Take stone lime fresh from the kiln and of the *best quality*, such as is known to make a strong and durable mortar (like the Thomaston lime.) Slake it by sprinkling or pouring over it just water enough to leave it when slaked in the condition of a fine *dry powder*, and not a *paste*. Set up a quarter-inch wire screen at an inclined plane, and throw this powder against it. What passes through is fit for use. That which remains behind contains the *core*, which would spoil the stucco, and must be rejected.

Having obtained the sharpest sand to be had, and having washed it, so that not a particle of the mud and dirt (which destroy the tenacity of most stuccoes) remains, and screened it to give some uniformity to the size, mix it with the lime in powder, in the proportion of *two parts sand* to one part lime. This is the best proportion for lime stucco. More lime would make a stronger stucco, but one by no means so hard—and hardness and tenacity are both needed.

The mortar must be made by adding water, and working it thoroughly. On the *tempering* of the mortar greatly depends its tenacity.

The wall to be stuccoed should be first prepared by clearing off all loose dirt, mortar, etc., with a stiff broom. Then apply the mortar in two coats; the first a rough coat, to cover the inequalities of the wall, the second as a finishing coat. The latter, however, should be put on *before* the former is dry, and as soon, indeed, as the first coat is sufficiently firm to receive it; the whole should then be well floated, troweled, and marked off; and if it is to be colored in water-color, the wash should be applied, so as to *set* with the stucco.

5. *Rough-Cast.*—The mode of putting on rough-cast is as follows:

The surface of the wall being brushed off clean, lay on a coat of good lime and hair mortar. Allow this to dry, and then lay on another coat as evenly and smoothly as possible without floating. As soon as two or three years of the second coat are finished, have ready a pail of *rough-cast*, and splash or throw it on the wall. This is usually done by another workman, who holds the trowel with which he throws on the rough-cast in one hand, and a whitewash brush dipped constantly in the pail in the other, which follows the trowel until the whole is smooth and evenly colored.

The rough-cast itself is made of sharp sand, washed clean, screened, and mixed in a large tub with pure, newly slaked lime and water, till the whole is in a semi-fluid state. A little yellow ochre mixed in the rough-cast gives the whole a slightly fawn-colored shade, more agreeable to the eye than white.

From a useful little work, "Every Man His Own Painter," published by S. R. Wells, New York, the following additional items upon the subject of painting are taken which will be found useful:

"The essential qualities of paint are: 1. Body, or covering quality. 2. Fluidity. 3. Drying and hardening. 4. Binding of adhesiveness. 5. Durability. It is not always within the power of the painter to adjust the first mentioned quality, for, as shown elsewhere, some pigments are opaque, others transparent; and no art known to the painter can change these peculiarities, yet, he may so combine them when making colors and shades, that the transparent color will be less transparent, or nearly opaque.

"It is sometimes found that paint 'curdles' or 'thickens' in the cup, and repeated additions of liquids, to give it *fluidity* or ease in spreading with the brush, destroys its body or opaqueness. The cause of this is attributable to improper quantities or proportions of the liquids employed in mixing. If an excess of dryers be added to oil color it will immediately 'curdle,' and form a glutinous mass; while a lesser quantity, and yet a sufficiency to dry the paint, will not 'curdle" it, providing the liquids or dryers (if not liquids) be of good quality. Therefore an excess of dryers will not always be advantageous on hurried work.

"The drying qualities of paint are not always given by dryers alone. Many of the pigments are of themselves dryers, among which may be mentioned red lead, umber, sienna, and Vandyke brown; and these therefore do not require so large a quantity of dryers when mixed with oil.

"Binding is an important feature in quick drying paints. or, as called, 'Dead color,' to insure adhesion to the work. If paint be mixed with turpentine alone, the turpentine will quickly evaporate and leave no residuum, except the dry pigment, which may be easily dusted from the work; therefore, oil or varnish is added to paint to bind the parties together. They, unlike turpentine, form a resinous coating by absorbing oxygen in drying."

"Paint intended for outside work, and which will not be protected by varnish, is mixed as follows:

"Crush the color if in lumps, and mix to a stiff paste with linseed oil, boiled or raw— but the latter is preferable—then, if a dark color add brown Japan or gold size, in the proportion of one-half a pint to a gallon of oil; if a light-color, use patent dryer in similar quantities.

"For painting in rooms where the smell of oil or turpentine would be objectionable, a preparation may be made, as follows:

"Take eight ounces of freshly slaked lime and mix it in an earthern vessel with three quarts of skimmed, not sour milk; then in another vessel mix three and a half pounds of Paris white with three pints of the milk. When these mixtures are well stirred up, put them together and add six ounces of linseed oil. Mix these well, and it will be ready for use. This preparation is considered by many to be equal to oil paint, and is excellent for walls and ceilings. Any shade may be made by the addition of dry pigments.

DISTEMPER PAINTING.

"The difference between oil painting and distemper painting is that in the latter the colors are mixed with size and water, instead of oil.

"Size for this work is generally made by boiling pieces of parchment, or the skins of animals, and evaporating the solution to the proper consistency; but a solution of glue will answer every purpose of the amateur.

"The colors used in distemper painting are the same dry colors used in oil, while the foundation or base is whiting instead of white lead.

"Kalsomining comes under the head of distemper painting, and will be noticed in this connection. The first requisite is to have the walls perfectly clean. If there be grease or lime on any part, it must be scraped, and made perfectly smooth, all imperfections, such as cracks ot nail holes, filled with putty made with plaster of Paris or whiting, and time allowed for the putty to harden before laying on the distemper.

Preparing the mixture.— Take half a pound of dissolved glue and ten pounds of zinc white (dry) if for extra work, or common whiting if for ordinary work, in the same proportion. Mix the white to a thick cream with warm water, then add the dissolved glue, and stir all well together. If for side walls, more glue will be required to insure it from rubbing off. A common whitewash brush will answer to lay it on with, and it should be applied while warm, adding hot water to thin it if found too thick to spread easily.

"In distemper painting it may be found expedient to coat the walls with a thin sizing of glue before applying the paint, and some painters prefer a coat of good oil paint to prevent dampness from striking out and discoloring the distemper coats.

"Coloring plaster work in distemper differs from fresco painting, inasmuch as the latter is applied while the plaster is quite wet, and is thereby incorporated with it, whilst the former is applied when the plaster is dry, and lasts only so long as the sizing with which the colors are bound withstands the action of the atmosphere.

"It was the practice of painters until of late years, to lay distemper colors evenly, one way only, as in oil painting; but the present method is to pass the brush in every indiscriminate direction, leaving it in that state which it is considered gives it a more solid appearance. A more recent method for obtaining the like object is called stippling. The surface is lightly struck with the end of a large hog's-hair brush, with a perfectly flat face and conveniently shaped handle.

"The expense attending the kalsomining of a room twelve by fifteen may be summed up as follows:

One half pound glue at twenty-five cents per pound	0.12
Ten pounds whiting at three cents per pound	0.30
One half pound glue, — extra to side walls	0.12
Whitewash brush	1.00
	$1.54

"The brush being uninjured, when used only on this room, is of course not to be taken into account as the actual cost of work, and its price should be deducted, making fifty-four cents the sum total. Ten cents worth of blue, yellow, red, green, etc., in dry colors, will form any desired tint.

PAINT FOR BARNS AND OUTBUILDINGS.

"A cheap and durable paint, not before mentioned in these pages, is called Fire-proof or Mineral paint. There are several shades of this paint, namely, yellow, red, brown, chocolate, slate, etc., and it is sold in barrels of three hundred pounds each, for two and a half cents per pound. When mixed with oil it is a very durable paint for outbuildings, fences, etc.

"But a cheap paint may be made as follows: Put half a bushel of good lime in a clean barrel, and add to it sufficient water to make a thin whitewash; stir it well with a flattened stick until every lump of lime is dissolved, and add:

50 lbs. mineral paint at two and a half cents	$1.25
50 lbs. whiting, at two cents	1.00
50 lbs. road dust, finely sifted	.00

"Then add linseed oil, and mix the mass to a thick paste, being careful to have it well amalgamated; then thin to the proper consistency for spreading with the brush, by adding sweet buttermilk fresh from the churn, in small quantities at a time, to give a chance for the ingredients to assimilate. This paint will also be improved as regards covering a great extent of surface, by the addition of one gallon of soft soap.

PAINT FOR IRON FENCES.

"Mix two pounds chrome green, one ounce of lampblack, and one ounce of chrome yellow, with boiled oil, adding a little Japan dryer, and a very nice bronze green will result. Clean the iron railing well, and apply a good coat of this paint. When not quite dry, rub over the prominent parts with gold bronze.

WHITEWASH.

"A good whitewash for walls is made by adding to fresh slaked lime and water a solution of starch, a little salt, and a few drops of dissolved indigo or bluing.

"Boil the starch to a thin gruel, adding the salt while boiling, and pour the whole into the lime and water while the latter is warm from the heat engendered while slaking; then add the bluing to remove the yellow tint of the mixture, and use. Colors may be added if desired, but the use of poisonous colors, such as Paris green, should be avoided

GRAINING.

In describing the methods of imitating the grain of wood, we will mention only the simplest, that the uninitiated in the art may readily execute a fair specimen, without the array of tools employed by the professional grainer.

"The colors used in graining may be mixed in oil or distemper, the latter being preferable, for if not satisfied with the first attempt, it is easily washed off with water, and the work done over again.

"Surfaces to be grained should be painted with at least two coats of paint, tinted as follows:

"For light-colored oak, tint the white paint with yellow ochre, to a nice cream color. For medium shade oak, add a little umber to the cream color. For dark shade oak, add umber and a little venetian red to the cream color.

"The last coat, or ground color, should be made to dry with an egg-shell gloss,' not 'flat' that the graining mixture will not be absorbed, and thereby make the graining appear dirty."

HOME RECREATION

Recreation is quite as necessary, at proper times, to our well-being as useful employments and occupations are. It is agreeable to persons of all ages and classes. Nature requires it, and the desire for it should be gratified to a reasonable degree. The busiest and greatest men, as well as the humblest, have found delight and solace in joining in recreations and amusements at home. It is related of a great English statesmen, that once when he was called upon by another public man who desired to see him on some grave political matter, he was found, not absorbed in State papers and official documents, but on all-fours in the nursery, having a good romp with his children. Anecdotes, almost numberless, are told of public men who, in seeking recreation from the labor and toil of state-craft or public duties, have frequently found it in "making some wonder for a happy child." Commend us to men and women who recognize the propriety and usefulness of innocent pastimes for their children, who cultivate home recreations, and are not loth at times to join in them themselves.

Home recreations and amusements not only are required as a means of social enjoyment, but they serve to attach the members of the family more closely to their home. The youthful portion of the household naturally craves recreation; and if it is not supplied at home young people will look for it elsewhere. To this circumstance may be attributed much of the trouble, anxiety and shame which come upon mankind. Contact with the vicious has led astray many boys of fine promise, who might have been of use to the race, and an honor to themselves, but who have fallen by the way, the victims to pernicious associations.

Children have rights which parents are bound to respect. They have the right to live, to be fed and clothed, and educated; to be supplied with interesting and instructive papers and books, and to be furnished with means of recreation and amusement in other ways. All this may be done in reason. The humblest may have their innocent enjoyments and pastimes, as well as those who are in the best worldly circumstances.

It is a sensible thing to combine instruction with amusement, but not to the exclusion of all pastimes with which instruction is not blended. A stereoscope, with a collection of views of noted places scenes and incidents, furnishes a source of infinite entertainment and pleasure to the young, as well as enjoyment for older members of the household. In like manner the microscope is a fruitful source of satisfaction and instruction. These instruments vary in price according to the use to which it is designed to apply them. But very good ones of fine magnifying power may be had at from one-dollar-and-a-half to three dollars. With them, wonders of nature may be seen which are impossible to discover with the naked eye, and a vast fund of instruction may be gained, while gratifying the curiosity of the child. Besides, it may be remarked, that the microscope is a very useful instrument in the family. By it many really important questions arising in household economy may be settled. Adulterations in food are often detected by its use, and it frequently happens that farmers thus detect the presence and habits of insects which prey upon their crops.

Sight wonders are not only a pleasing means of recreation, but they excite healthy curiosity in the minds of the young to learn more of "the Book of Nature," and beget a thirst for knowledge. Prof. James Cherry, in speaking of sight wonders, asks: "Has the thought ever come to you what a wonderful age of sight this in which we live is? How that our eye alone takes us farther into the mystic spheres of celestial and creative space than the combined sight and reasonings, or even the wildest imaginings of wisest sage and philosopher ages agone? Where indeed shall be formed the limit of creative phenomena, beyond which man's penetration shall not hope to peer—the line drawn in abstract space wherever shall be blazoned 'Thus far shalt thou come?'

"We are all familiar with the improvements that our own age has perfected in the telescope, whereby we may revel in illimitable space, and drag forth from behind their veil of mystic millions of miles the secrets of the vast heavens to ponder over and utilize. And in the minutiæ of creation there seems to be as little limit to man's vision through the perfection that the microscope is being brought to. But should there not be a serious lesson of contrition and humility to us, as well as an awakening sense of our littleness and subserviency, when, as we indulge in proud estimates of our power in peering into the secret economy of creation, we stumble upon the knowledge that in every drop of water, every bite of food, every breath of air that we use, is a minute world having its own atmospheres and climates; its own form and surrounding space; its growths, its seed-times and harvests; its creatures, living, building, producing, and dying; its wise purposes and economies; all harmonizing and forming a necessary part of the creative plan like ourselves.

"Take, for instance, a speck of yeast. The microscope reveals to us that within it are forests of minute vegetation, growing, blossoming, going to seed, and reproducing, all in a space of time that can only be measured by seconds. Within these forests, live, roam, and die, created beings—minute animalculæ, proportioned and fulfilling their spheres of action.

"The microscope also reveals to us that the marsh miasms of our low lands are really formed of animaculæ so minute as to require 13,000 of them to make a speck large enough to be visible to the naked eye. It is believed that to the inhaling of these and their passage into the blood of the system, people of these districts owe the visitations of fever and ague and other diseases peculiar to these localities. The long continued ill-effects of miasmatic diseases may be attributed to the rapid reproduction to these infinitesimals in the blood, and hence the difficulty of their extirpation."

Another useful appliance in home recreation is found in a globe. The form and motions of the earth, the phenomena of eclipses, the location of countries, and very many things relating to the earth can be explained easily and intelligently by its use. These globes are not expensive; they are of various styles and sizes and can be had of various styles and prices, suited to any range of income.

The use of a globe in a family awakens new thoughts in the minds of children; their curiosity is excited, and they will desire to learn all that can be learned in connection with it. Lessons are simplified and easily learned. The globe should be a much more common article of apparatus in families than it is. Frequently it may serve only the purpose of an *ornament*; but it should serve a most *useful* purpose, and will, if

parents know how to use it. If no one in the household understands how to use it, there are little books containing simple rules and instructions which are easily comprehended, and will enable parents, and even the older children to make the globe very interesting as a means of recreation.

Another source of pleasing and valuable recreation is the Magic lantern. It is not only a source of very great gratification to both young and old, but it is also a valuable adjunct to popular instruction. At first it was simply a toy, but, long since, it became a really valuable scientific instrument. Though its origin dates back three hundred years, it is comparatively but a short time since it reached its present perfection.

To operate a magic lantern successfully it is important to have a good understanding of its construction and of the manipulations necessary to produce satisfactory results; and therefore the novice will do well to carefully study the following information upon "The Magic Lantern and How to Work it," which is from a trust-worthy source:

"A great impulse was given to the art of lantern-making by the introduction of photographty as a means of making the small pictures required for exhibition. Those formerly used were produced by hand; and when it is considered that they were enlarged from a diameter of three or four inches, to ten or twelve feet, it will at once be evident that great care and delicacy of manipulation were required in their production. This, of course, made really good slides exceedingly expensive — indeed they were altogether beyond the means of persons of limited income — and the result was that common, ill-drawn, and vilely-colored pictures were the general rule, and the lantern exhibition became a thing of horror to any person having an ordinary amount of taste. Photography has changed all this; and at the present time good photographs may be procured at a less outlay than that involved a few years since for the purchase of uncommonly bad drawings. The whole world has been laid under contribution by photographers, and the natural features of different countries, their great cities, mountains, lakes, waterfalls, and their various monuments of ancient and modern art may now be exhibited in our drawing-rooms as transcribed by the pencil of Nature itself.

"As nothing is too large for the lantern, so also nothing is too minute. The wonders of the microscopic world — the 'infinitely little'— have also been faithfully copied by the same almost unerring means, and the wing of the smallest fly, the structure of the most delicate moss, or the arrangement of the globules in the blood, may be exhibited on a ten or twenty feet disc to scores or even hundreds of persons at one time.

"Under these circumstances, the popularity of the magic lantern is not surprising, and as it is increasing day by day, we give such rules and instructions for their management as may enable even those who are totally unused to such matters to work and exhibit them in the home circle, not doubting that if we can induce 'papa' to purchase an instrument, and frequently use it, we shall at least obtain the thanks of the more juvenile portion of the family.

"Magic lanterns may be procured at all prices; but, as in all other matters, a really good instrument is somewhat expensive. If we leave out the toy-lanterns, which are not of much use, the smallest size which can be recommended is that with the two-inch condensing lenses. This, if properly constructed, will project a disc of light having a diameter of from four to five feet. The next really useful size is that in which the condensing lens is three and a half inches in diameter; and a good lantern of this size will yield a well-defined picture of ten feet. It should be remembered, however, that as the disc is increased in size, the amount of light is diminished; and, as a rule, it is better to work with a picture of moderate dimensions, and ensure its being brilliantly lighted, than to produce a larger disc which is ill-defined and badly illuminated.

First, in regard to buying a lantern. In purchasing the instrument it will be better to apply to a good optician, and trust to him, than to buy a second-hand lantern, which perhaps is imperfectly made or seriously injured. The price will vary, according to the size and finish of the instrument, from ten to fifty dollars; and it is far better to buy one of good quality at once, than to have a second-rate one, which will be always costing money for repairs.

"We will now suppose the lantern purchased and ready to be set up at home.

"The first thing required will be a sheet or screen of some white material, which must be stretched perfectly tight and without folds, either upon the wall, or across the opening made for folding-doors. If the lantern is to be in the same room as the spectators, this screen is better used dry, and cannot be too stout or opaque. If, however, the pictures are to be shown through the screen, a more transparent medium may be used with advantage, and damped to increase its transparency. The size of the screen will, of course, vary with that of the lantern, and the picture should be kept well upon it, and not allowed to fall over its edges. The next thing will be to prepare the lamp. This will, in a good lantern, be of the Argand form, with a circular wick, which must be fixed upon the inner ring by means of the tapered stick supplied with the lantern. The reservoir, should then be filled with the best sperm oil, which has previously been well warmed, and rendered perfectly fluid. The wick should be thoroughly dried, and screwed into position, and when it is quite saturated with oil it may be ignited all round. Should the wick be too long for the lamp, a portion may be roughly removed, and when the upper end is slightly charred, it must be cut perfectly even with a pair of very sharp scissors. The glass chimney having been previously cleaned and polished, may now be placed in position, and screwed on; but the lamp should not be turned fully on till the glass becomes quite warm in order to avoid risk of breakage. It cannot be too distinctly remembered, that the whole success of the exhibition depends upon the employment of a clear and brilliant light, and that any trace of smoke upon the glass will very materially affect results. The lamp being thus prepared, the reflector should be very brightly polished, by means of a soft leather and a little whitening, and placed in position behind the lamp. The condensing lens should now be unscrewed, and polished; and it is better to slightly warm it before it is replaced. If the object-glasses are dirty, they also should be cleaned; and it should always be remembered that any dust, dirt, or smoke, upon any of the lenses, will materially impede the passage of the light from the lamp, and preclude the possibility of anything like a brilliant picture upon the screen.

"The lamp thus prepared should now be placed in its proper situation in the lantern, and the whole apparatus set firmly upon a table of sufficient height to bring the illuminated disc into the center of the screen. The best lanterns are generally supplied in a box which is fitted with screws to keep them in position. When placed upon this box, which in turn is placed upon a firm table, the lantern will be about the proper height from the floor. In order to obtain proper definition, the lantern should be placed exactly in the center of the screen, so that the rays of light from the lens to both edges of the disc may be of equal length. Unless this is the case, perfect definition cannot be obtained; and the lines of the picture will be blurred and indistinct on one or the other of the edges. It will most probably happen that when the disc of light from the lantern is first projected upon the screen, some portions will be lighter than others. This is because the lamp is too near or too far removed from the condensing lens; and the defect is easily remedied by altering its position in the lantern by means of the wire. The lantern thus adjusted is now ready for use, and the next thing claiming attention is the preparation of the slides for exhibition.

"The small pictures used in the lantern, and called slides, vary considerably in character and in price. Some of the cheaper ones are merely rubbish, and are calculated to disgust all persons having the slightest taste for art. Others are expensive; and some, although very good, are not suited for exhibition in such lanterns as are likely to be in ordinary household use. Many photographic slides, for instance, are too opaque in the deepest shades for effective exhibition by means of the oil lamp, but require the oxyhydrogen light. Care should therefore be exercised in their selection, and only the thin and transparent ones chosen. If this be explained to the optician, he will select suitable slides; but it must be always borne in mind, that photographs require as a rule, much more brilliant illumination than painted subjects. The slides should be carefully dusted before placing in lantern, as every speck of dust is magnified in the same proportion as the picture, and a spot which is almost imperceptible on the picture, will appear as huge blot upon the screen. The subject of each picture should also be marked upon the frame which supports it, in characters which may be easily read in the dim light which prevails in the exhibition room. All being thus prepared, a trial slide may be inserted, remembering that in the lantern all the pictures are reversed, and must be placed in the groove upside down. If a landscape, the sky must be downwards; if a figure, the head. At first, the picture will probably be hazy and indistinct. This is because it is not "in focus"—that is, because it is too near or too far from the object-glass. This must be rectified by turning the rack-work, forward or back, until proper definition is obtained, and the picture is sharp and distinct over the whole surface of the screen.

" We should advise the tyro who has not previously worked a lantern, to indulge in one or two private *seances* before appearing in public.

" Hitherto we have confined our attention to plain slides, which produce a representation of scenes or objects without life or motion; but there are others, which by means of various mechanical arrangements, produce, though somewhat rudely, the appearances of animated life. The most common of these is the slipping slide, which is made of two plates, the one slipping over or before the other. By means of this arrangement, some very comical transformations are produced. For instance, a man is carrying a pig's head on a dish—by drawing the slip, the man's head is transferred to the dish, and that of the pig to the man's shoulders. This is, of course, great fun, and is always intensely relished by the youngsters.

"A second variety is termed the lever slide, which may be made to produce some very pretty effects, such as a horse drinking from a pool, or a fowl picking up food. But perhaps the most brilliant mechanical slide is that called the "chromatrope," which consists of a series of geometrical figures brilliantly painted upon two discs of glass, one or both of which are made to revolve by means of rackwork. The effect of a good chromatrope is superb, and the collection of slides cannot be considered as at all complete without one or two of these. Sometimes they have the word "Welcome," surrounded by a star; this makes a good beginning to the exhibition; and "Good-night," in a *still* more brilliant setting, will mostly send the most fastidious youngster off to bed in a happy frame of mind. Of a similar character are revolving slides, in which a wind or water mill is represented in motion. These also rarely fail to please; and many of such slides are not only pretty, but really artistic pictures, which can be looked upon with pleasure by young and old alike.

"After this, it may be asked, 'Can anything be better than a magic lantern?'—to which the reply must most certainly be, 'Yes; two magic lanterns.' For by these means can be produced the beautiful effects known as dissolving views. When using only one lantern, the change of slides must be effected either while the light is altogether shut off, or by leaving the bright white disc upon the screen, pending the insertion of a fresh picture. In either case, the effect is unpleasant; but, by using two lanterns, one picture can be softly dissolved into another with the most charming effect.

"There can be no doubt that this is by far the best and most artistic mode of working the magic lantern; but, of course, it involves the cost of extra apparatus. Two lanterns are required, which should be placed side by side, and be exactly alike in every particular. When lighted and arranged, as we have described for the single lantern, they should be so placed as that the discs of light are exactly coincident. Usually, the two lanterns are fitted to the top of the box in which they are kept when not in use. The front of this box is supplied with a rackwork bar of brass, which is made to travel by means of a pinion and a small handle, upon the horizontal bar, are secured two perpendicular rods, which support plates of metal having very deeply toothed ends. When in use, one of these plates entirely covers the aperture of one lantern; but as the rackwork is removed by the handle, the light is gradually shut off from one lantern and allowed to escape from the other. The effect of dissolving is thus produced, one picture melting softly into the other.

"In commencing an exhibition of this kind, bear in mind that one lantern should be covered with the screen, and the other, with a piece of cloth or velvet. Two slides should then be inserted as before directed. The cloth may then be removed, and the first picture shown. The rackwork being then set in motion, the first view may be dissolved into the second; and while this is being shown, the first exhibited slide should be withdrawn, and replaced by a third, and so on through the series. In some cases slides are made in sets for use in this way; as, for instance, when a scene is intended to change from summer to winter. In this case, care must be taken to insure accurate "registration," that is, that the images shall be exactly on the same place upon the sereen. Sometimes both lanterns are required at once, as in the introduction of a swan into a mill-pond. In such a case, the screen must be temporarily turned back, and replaced after the picture has been exhibited a sufficient time.

"There are many very beautiful effects to be produced when two lanterns employed, which we need not here enter upon, as the purchasers of the slides will receive full information as to the best mode of working them from the optician who furnishes them.

"We should advise the amateur to provide himself with two lanterns, if possible, at first; but, if this be too expensive, he should so arrange that a second may be procured at a future time, which shall be exactly similar to the one already in use.

"We have not in this article mentioned the mode of lighting by means of the oxyhydrogen or oxycalcium lamps, because they will not be often required for such exhibitions as they are given in the house; and as the result of much experience and practice, we can assure the reader that with ordinary care and attention he will find the foregoing instructions perfectly reliable, and amply sufficient to ensure a pleasing evening's entertainment for the juveniles."

Arithmetical puzzles furnish recreation for the children, and even for older persons, as well as discipline the mind in mathematics. A few of these problems are here given, with their explanations:

A Problem for Arithmeticians.—A. and B., two countrymen, came to the Chicago market with 30 geese each. A. sells his 30 geese at the rate of two for $1, and B. sells his 30 geese at the rate of three for $1, at which rate the purchaser seems to get five geese for $2. The net proceeds of the sales, however, amounted to $25. Subsequently A. and B. have another lot of thirty geese each for the market, but as A. is sick, he gets B. to sell his lot, who comes to the market, and believing that he was selling his geese on the same terms as before, offers them at the rate of five for $2. When he returns home, he finds, in making up his account with A., that he has only netted $24 for sixty geese, and is out $1, but cannot account for the deficiency. In the first instance, the sixty geese brought $25, in the second only $24, and yet he has apparently sold them on the same terms — five for $2, as they sold them in the first place three for $1, and two for $1—five for $2. Can any of our smart men at figures account for the deficiency of $1 on the second sale?

"*Answer.*—The solution of the problem of the geese is very simple. It is true that the buyer of the geese from A., at two for $2, and from B. at three for $2, obtains five for $2. But when B. has sold all of his geese, having received $10 for his 30, A. has only sold 20 for the same money, and has 10 left at the rate of two for $1. Thus, when A. has sold only 20, the rate of five for $2 ceases; being two for $1, or four for $2, for the remaining ten belonging to A. Therefore this accounts for the difference of $1 between the two sales.

"*Practical Puzzle.*—It is required to name the quotient of five or three lines of figures—each line consisting of five or more figures—only seeing the first line, before the other lines are even put down. Any person may write down the first line of figures for you. How do you find the quotient?

"*Answer.*—When the first line of figures is set down, subtract 2 from the last right-hand figure, and place it before the first figure of the line, and that is the quotient for five lines. For example, suppose the figures given are 86,214, the quotient will be 286,212. You may allow any person to put down the two first and the fourth lines, but you must always set down the third and fifth lines, and in doing so always make up 9 with the line above, as in the following example:

86,214
42,680
57,319
62,854
37,145
Qt. 286,212

Therefore in the annexed diagram you will see that you have made 9 in the third and fifth lines with the line above them. If the person desired to put down the figure, should set a 1 or 0 for the last figure, you must say we will have another figure, and another, and so on until he sets down something above 1 or 2.

67,856
47,218
52,781
Qt, 167,855

In solving the puzzle with three lines, you subtract 1 from the last figure, and place it before the first figure and make up the third line yourself to 9. For example: 67,856 is given, and the quotient will be 167,855, as shown in the above diagram.

To Tell any Number Thought Of.—Ask a person to think of a number; then tell him to subtract 1 from that number; now tell him to multiply the remainder by 2, then request him again to subtract 1, and add to the remainder the number he first thought of, and to inform you of the total. When he has done this, you must mentally add three to that total, and then divide it by 3, and the quotient will be the number first thought of. This is an excellent arithmetical pastime, examples of which we give below:

10	15	18	23
1	1	1	1
9	14	17	22
2	2	2	2
18	28	34	44
1	1	1	1
17	27	33	43
10	15	18	23
27	42	51	66
3	3	3	3
3)30	3)45	3)54	3)69
10	15	18	23

The Expunged Figure.—In the first place desire a person to write down secretly, in a line, any number of figures he may choose, and add them together as units; having done this, tell him to subtract that sum from the line of figures originally set down; then desire him to strike out any figure he pleases, and add the remaining figures in the line together as units (as in the first instance), and inform you of the result, when you will tell him the figure he has struck out.

76542--24
24
76518

Suppose, for example, the figures put down are 76542 these, added together, as units, make a total of 24; deduct 24 from the first line, and 76518 will remain; if the 5, the center figure, be struck out the total will be 22. If 8, the first figure, be struck out, 19 will be the total.

In order to ascertain which figure has been struck out, you make a mental sum one multiple of 9 higher than the total given. If 22 be given as the total, then 3 times 9 are 27, and 22 from 27 shows that 5 was struck out If 19 be given, that sum deducted from 27 shows 8.

Should the total be equal multiples of 9, as 18, 27, 36, then 9 has been expunged.

With very little practice any person may perform this with rapidity; it is therefore needless to give any further examples.

Arithmetical Puzzle.—Arrange the figures 1 to 9 in such order that, by adding them together, they amount to 100.

It is done thus:

15
36
47
—
98
2
——
100

The Remainder.—A very pleasing way to arrive at an arithmetical sum, without the use of either slate or pencil, is to ask a person to think of a figure, then to double it, then add a certain figure to it, now halve the whole sum, and finally to subtract from the figure first thought of. You are then to tell the thinker what is the remainder.

"The key to this lock of figures is, that half of whatever sum you require to be added during the working of the sum is the remainder. In the example given, five is the half of ten, the number requested, to be added. Any amount may be added, but the operation is simplified by the giving only even numbers, as they will divide without fractions.

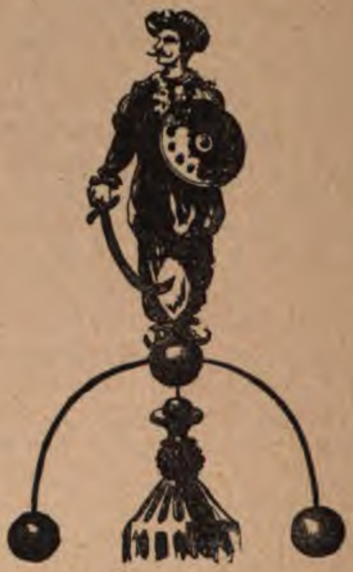
Example.

Think of	7	
Double it	—	14
Add to it		10
Half of it		1-2)24
Which will leave		12
Subtract the number thought of		7
The remainder will be		5

For the special benefit of the young folks, we add a description of

The Performing Shadows.—Some figure is cut from card-board, and two threads by which it may be moved are attached to the back and front; or, if preferred, one of those jumping figures with elastic strings, which are sold at the toy-shops, may be used for the purpose. A sheet is suspended before the audience, who are seated in a dark room; the sheet itself is darkened, by placing a paper or other screen upon it in those parts where the figure is not intended to appear. The figure is hung just behind the sheet. It is, of course, necessary to rehearse the performance once or twice beforehand, so as to adjust the lights to produce the effect. Each candle, properly held, throws a distinct shadow upon the curtain. and several figures, therefore, appear to be moving upon it. The movements, if necessary, may be managed by additional strings carried to the darkened side of the sheets.

The Balanced Turk.— A decanter or bottle is first obtained, and in its cork is placed a needle; on this is balanced a ball of wood, having a cork or wooden figure cut out, standing on the top, such as that seen in the picture. From the ball project two wires bent semi-circularly, having at their extremities two bullets. If the little apparatus be made as here shown, you can give the bullets a twist, and the whole will turn round on the needle, the figure standing upright all the while, and twist it about from side to side as much as you like, it will always regain its erect position. The two bullets, in this case, cause the centre of gravity to fall below the ball where the figure is placed, and, in consequence, as the centre of gravity always assumes the lowest position, it cannot do so without making the figure stand erect, or in other words, until the bullets are equally balanced. Any boy may whittle one of these little toys out with a jack-knife, and cut any figure that may suit his fancy. To make a curious little variation of this experiment, drive a needle, head first, into the end of a cork; into each side of the cork stick a common fork; then invert a tumbler, and place the point of the needle on it, and give the cork a twirl with the fingers, when it will revolve for a half an hour or more.



The Courtiers.— One of the company is selected to be king or queen, and occupies a chair in the centre of the room, the rest being seated round the sides of the apartment. Whatever movement may be made by the monarch must be imitated by the courtiers; and it is the gist of the game that this should be done without any one losing that assumption of decorous gravity which becomes the scene. The monarch may yawn, sneeze, blow his nose, or wipe his eye, and the courtiers must all do the same; but if any one of them is so deficient in self-control or so presumptive as to grin or to laugh, he or she must pay the penalty of a forfeit. It is rarely, however, that penalties are few or far between.

Acted Charades.— Acted charades, in which syllables and words are represented by short dramatic scenes or tableaux, are a modern invention, and rank among the most attractive of in-door amusements. They require no great art in the performance, and a little practice will enable any family circle to get them up, when they know how to set about it. A word is chosen, of two or more syllables, each of which has a distinct meaning; these syllables are then represented in their order, by action, either with or without dialogue, and afterwards the entire word is expressed in the same way, the spectators being expected to guess what each scene has represented.

"The company should properly be divided into two parties, each side in turn performing a charade, or tasking its penetration to detect the word on which the performance of the other side was founded. But if there be many persons present, the better plan is to select a few from the company to form sides, and each will thus relieve the other in contributing actively to the general amusement. All persons, old or young, may be brought into the performance of particular scenes, if they are disposed to enter into the pastime.

"The first thing necessary is the apartment in which the charades are to be enacted. The ordinary pair of rooms with folding doors, or a pair which may be separated by a screen or curtain, is well adapted to the purpose. The larger should be devoted to the general company or audience; the smaller being the arena in which the performances take place. During the preparation of the charade, and between its different scenes, the doors are closed; and, in order to prevent the spectators feeling the intervals irksome, it is well for some one to volunteer a little performance on the piano, or for ordinary conversation to go on as if nothing were expected.

"The performers, retiring, agree among themselves as to the word which shall be the subject of the charade. As a rule, words of two syllables are best; for these, requiring three scenes in all for their expression, are found quite long enough both by the performers and by the spectators who have to guess their meaning. As we have intimated, each syllable of the word chosen should be complete in itself, and capable of complete expression in the little drama or pantomine which has to be represented. Far-fetched puns and distortions of language are generally inadmissible, as not affording a fair chance to the opposite side, or to the company who comprise the audience, to guess the word which the scenes are designed to convey;

but the simple doubling of a consonant, as where 'in' is expressed by the representation of an 'inn,' or the occasional addition of a vowel which does not affect the sound, as in 'pi(e)lots,' is perfectly allowable; and this hint will furnish our readers with a key to the solution of many charades which at first may appear very puzzling.

As examples of words, mostly of two syllables, from which a selection may be made, we will give the following:—

Almshouse
Altar (all-tar)
Artful
Backgammon
Bagpipe
Bandage
Bandbox
Bargain
Beefeater
Bellman
Birthday
Blacksmith
Blackstone
Blockhead
Blunderbuss
Boatswain
Bracelet
Breakfast
Brickbat
Bridecake
Bridegroom
Bridewell
Cabbage
Carmine
Carpet
Catcall
Caterpillar
Chairman
Checkmate
Childhood
Cornice
Cottage
Counterpart
Courtship
Coxcomb
Crosspatch
Cutlass
Dewdrop
Donkey
Earwig
Eyeglass
Falsehood
Farewell
Fireworks
Footpad
Gooseberry
Gunpowder
Hamlet
Handcuff
Helpmate
Honeymoon
Hornpipe
Hostage
Idol
Innkeeper
Jew's-harp
Jovial
Keyhole
Luggage
Madcap
Magpie
Messmate
Milksop
Mis(s)take
Nosegay
Outfit
Pancake
Patchwork
Patriot
Pilgrim
Pi(e)lot
Postboy
Rest-oration
Ringlets
Saucebox
Shamrock
Snuffbox
Spinster
Sweetheart
Telltale

The Dumb Orator.— This is a very amusing performance, enacted by two persons for the benefit of the rest of the company. One of the two recites a speech, or any popular piece of declamation —"My name is Norval," or the like — keeping all the while perfectly motionless, and without a quiver upon his countenance, while the other standing silent by his side, gesticulates furiously, according to the emotions called up by the passage recited. Of course, the more closely he follows and burlesques the action natural to the words throughout, the greater the amusement created. There is another way of performing the same oratorical show, namely, by the two players enveloping themselves in the same cloak or wrapper, and the arms of the one, which are all the company are allowed to see of him, keeping up an action suited to the narrative of the other; but this is more awkward in the performance, and less effective than the method first described.

Speaking Buff.— At this game the eyes of one of the players are bandaged, as in "blind man," and he is seated in the centre of the room, the party then taking their places. "Buff" holds a wand or stick in one hand, and, when all are seated, he points with this to one side of the room, or touches one of the players, at the same time uttering three words according to his fancy. The person towards whom he points must then repeat these words; and if "Buff" can discover his or her identity by the tones of the voice, he is released from his position, and the person detected takes his place.

The Shopkeepers.— This is a good game to exercise a knowledge of the various productions of nature. Each person in the company represents a shopkeeper or merchant, who has some goods on hand which he wishes to dispose of; but no two persons may choose the same trade. Any one may start the game — say, for instance, the draper — and he commences, we will suppose, by observing to his next neighbor, "I have some silk for sale; is it animal, vegetable, or mineral?" To this the reply would be, "Animal, for it is the production of the silk-worm." The correct answer having been given, we will assume by the chemist, the latter turns to the person next him, with an inquiry suited to his trade; say, "I have some glycerine for sale; is it animal, vegetable, or mineral?" The rejoinder would be, "Either animal or vegetable, for it may be obtained from either vegetable or animal fat." The merchant, in his turn, may say, "I have some shell-lace for sale; is it animal, vegetable or mineral?" and should receive the reply, "Animal, for it is obtained from an insect." So the game goes on, the ingenuity of each, as it proceeds, being taxed to mention some article of his stock, the origin of which may not be within the knowledge of the person addressed. A round or two of the game will rarely proceed without some of the company finding that they have added to their store of general knowledge, as well as derived amusement. Any such information as that contained in Natural History or history of any kind, or other branches of knowledge may be turned to account in sport, as well as in matters of graver moment. The game may be played, either with forfeits as the penalty of an incorrect reply, or by simply restricting the person who does not answer correctly from disposing of any of his own articles, that is, from putting any question in his turn, during that round.

Twirling the Trencher.— This is a brisk game, requiring activity without ingenuity. A circle is formed in the room, and a good space is left clear in the midst. A trencher or round wooden platter is obtained, or, if such a thing is not available, a small round tray or waiter will best answer the purpose. When all the party are seated, one of the company stands up in the centre and twirls the tray round upon the floor, at the same time calling out the name of any other person present, who must rise and pick up the trencher before it falls to the ground, otherwise he or she pays a forfeit. The person who twirls the trencher returns to his own seat immediately, and the one who picks it up, or has been called upon to do so, has the privilege of making a call afterwards.

Proverbs is a game of a more intellectual character. In this, one person volunteers, or is chosen by the company, to leave the room.

and in his or her absence a proverb is fixed upon by the remaining party. The person outside is then called in, and the first person whom he addresses with any remark or inquiry, is bound to reply to him with an answer in which the first word of the proverb is introduced. The second person to whom he goes must reply in such a way as to bring in the second word; and so on, until the proverb has been repeated. He is then informed that he need not proceed further, and is left to guess the proverb chosen. If he fails in these attempts, he must again retire, and his ingenuity is tried by the selection and repetition of another proverb. Any one making an answer in which the right word in turn is not introduced, pays the penalty of a forfeit, and the company are, therefore, on the watch to see that each person addressed duly performs the part. The great art of the game is in so wrapping up the word in the course of the reply as to make it difficult to the guesser to discover the proverb which was chosen. Some proverbs are far more easy of detection than others, from the forcible or peculiar words comprised in them, or the difficulty which the answerers find in concealing the words which fall to them in rotation. "Still waters run deep" may be taken as an example of the class difficult of concealment, for "waters" and "deep" are awkward words to introduce, and will easily connect themselves in the mind of the guesser, who is on the watch for his clue. "Where there's a will there's a way" is more capable of disguise, but "will" and "way" will reveal themselves to a person quick of apprehension. None of the proverbs chosen should consist of very many words, or the guessing may become tedious. When the proverb is detected, the guesser is entitled to claim that some one else shall take his place, and may, if he pleases, select for that purpose the person whose insufficient disguise of the allotted word gave him his first clue. Or he may name any one else in the company for the purpose. If the guesser tries his skill two or three times without success, he may claim relief from his office, and some one else may be appointed. In this, as in all other games, it must be remembered that when weariness on any side commences, amusement is at an end; and where there are symptoms of a game reaching that point, it should be relinquished for another.

It is not necessary to multiply these recreations. They might be extended indefinitely. Out door-sports and games, in favorable weather, should form no inconsiderable portion of home recreation, on account of their invigorating and health-giving influences upon young and old.

FOREST TREE CULTURE.

The growing taste for shade and ornamental trees and in view of the vast amount of trees manufactured into lumber every year, and the use of timber for other purposes as well as on account of the lack of timber in vast regions of the west, it is proper to refer briefly to the propagation, planting and culture of trees, and as many persons — especially in newer portions of the country where trees were always scarce or entirely wanting, and in older portions where they have become scarce — may profit by information upon this topic, the following from an excellent work entitled "Forest Trees," by Alfred Bryant, Senior, of Princeton, Illinois, (published by Henry T. Williams, New York,) will be found very useful:

"It may be stated as a general rule, that the best and cheapest mode of growing forest trees for timber is by means of the seed. Most kinds of trees may be propagated by layers, many from cuttings; but the result is often the production of inferior trees. Exceptions may be found in the willows, most if not all the poplars, the buttonwood, etc., which are most readily grown from cuttings. As no uniform mode of management can be practiced in gathering, preserving and planting the different kinds of tree seeds, their treatment will be best given in connection with the descriptions of the classes or species to which they belong.

"To prepare the soil for the reception of seeds to be planted where the trees are to remain, or for young trees from the seed-bed, the ground should be deeply ploughed and rendered mellow. It may then be marked out in rows four feet apart. If tall, straight timber is desired, the young trees must be planted thickly in the rows, and thinned as their growth requires. Acorns and nuts may be planted thickly in the rows, and thinned as their growth requires. Acorns and nuts may be planted one foot apart; trees from the seed-bed two feet. When grown only for other purposes — for fuel, fruit, protection, etc., the distance may be varied to suit the object.

"Where hillsides and slopes, not too steep to plough but likely to wash, are to be planted, it will be best to adopt the practice of cotton growers on uneven lands in the Southern States, there called *circling*. The ground is ploughed horizontally and the rows marked in the same direction, making curves where necessary, to correspond with the surface of the slope, and keeping all parts of each row as nearly as possible on the same level. By this management the danger of injury from washing by heavy rains is greatly lessened.

"The sides of ravines and river bluffs, too steep for the use of the plough, may be planted with acorns, nuts or young trees, with the spade or garden-trowel. The European Larch is well suited to such localities. The vegetation in such situations is usually thin, and the turf not compact, and young trees will thrive there without cultivation better than on level lands.

"Land for seed-beds should be deeply ploughed and the soil well pulverized. If poor, it should be enriched with well-rotted manure. The seeds may be sown in narrow drills, twelve or fifteen inches apart, and covered from half an inch to one inch deep, according to size. If the ground be somewhat dry, a hand roller should be passed over it after sowing. It is best to sow as early in the spring as the ground can be got in good condition. Some seeds vegetate at a low temperature, and it is desirable that the plants should be growing well before hot, dry weather occurs. The ground should be kept free from weeds, and frequently stirred between the drills during the summer. Such kinds of trees as make a growth of nine inches or more the first season, should be carefully taken up in the fall, their long roots shortened for convenience in replanting, and heeled in or buried, to be planted in spring where they are to remain. The labor of replanting is much less than when they are larger, and they are likely to make finer trees. Those which make but little growth the first year, may be left two or three years in the seed-bed. When this is done, they should be covered during the winter to prevent their being drawn out by the frost. A light covering of straw or coarse manure will answer the purpose.

"After the young trees are planted where they are finally to remain, they should receive such cultivation as is bestowed upon a crop of corn. In ploughing among them a short whiffletree, eighteen or twenty inches long, should be used to avoid injuring the trees. Weeds should be kept down in the autumn, as they afford shelter to mice. In November the rows should be ridged, which is done by turning a furrow against the trees on each side with a light plough. If one-half of the stems of the trees is covered, so much the better. Especially is this necessary the first season and upon level land.

There is less danger that the plants will be drawn out by frost water cannot collect around them in winter, and the ravages of mice are prevented. The ridges may be easily leveled in spring with an iron rake, or with the cultivator. After three or four years, ploughing may be discontinued; and the plantation will, thenceforth, require little other care than pruning and thinning from time to time as may be needed.

"As forest trees differ greatly in the rapidity of their growth, and the size to which they ultimately attain, it is best, as far as possible, to plant the different kinds separately. In a timber belt they may be disposed in squares or blocks. When planted promiscuously, the more rapid growers overpower the weaker. Evergreens and deciduous trees designed for timber, should not be mingled together in plantations.

"The seeds of the oaks, the black walnut, butternut and the hickories, most, of which do not transplant well, should be planted where the trees are to remain. Trees, the seeds of which are small, or which make but little growth the first year, are best grown in seed-beds, until they are of proper size for transplanting.

"For raising willows or poplars from cuttings, the slips should be not less than eight inches long, rejecting such as are less than one-third of an inch in diameter. They are best cut in autumn, and tied in small bundles with osier-withes or tarred twine. They may then be buried in the ground, selecting a spot not likely to become wet, or packed in damp earth and put in a cool place in the cellar. As early in the spring as practicable, they should be planted in a trench made with the plough or spade, placing them in an upright position, pressing the earth compactly around the lower part and leaving only an inch or two above ground. They are then to be cared for like seedlings.

"Other modes of propagating forest trees — by layers, grafting, budding, etc., are employed by nurseryman and amateurs: but they would be of so little practical use to the great majority of those who may engage in forest culture, that their consideration here will be omitted."

WINDOW GARDENING.

In a preceding part of THE HOME GUIDE, (under the head of "Home Decoration,") mention is made of house plants, and the purpose they serve in making a home pleasant. The subject of window gardening belongs to that department of household economy but it may properly be considered by itself.

There is a growing taste throughout the country for this species of home adornment; and it is an encouraging sign, for it indicates the development of refined and elevated tastes.

The subject of Window Gardening has attracted no little attention of late years, both from professionals and amateurs who have given the people much valuable information thereon through public prints and books. A valuable work entitled "Window Gardening," was issued recently by Henry T. Williams, No. 5 Beekman Street, New York, upon which we have drawn for much useful informationin this article. Referring to the pleasure to be derived from cultivating a taste for this department of household economy the editor of the above work says:

"No home of taste is now considered complete without its Window Garden. Indeed it may be said that Window Gardening is one of the most elegant, satisfactory, yet least expensive of all departments of Rural Taste. As a useful means for developing a taste for plant-life and a love for flowers, I count nothing so effective as this simple style of gardening; for who has not noticed that where flowers reign, grace of mind and manner soon follow. One of the advantages of Window Gardening is its simplicity, open to every one and impossible to none. Thousands of persons confined to their homes for the greater part of their life have no greater rural estate than that which the Window Garden affords. To watch the unfolding leaves and budding flowers, the development of branch after branch, is a study of the reality of plant-life, exquisitely interesting to the soul who finds in it its only world of pleasure and sentiment.

"It is a form of gardening too, of permanent use and value. The Window Garden is independent to a large degree of the varying seasons, for it can be made attractive every month in the year. The advent of Spring, Summer and Autumn, only render the plants of the Window Garden more luxuriant and make the flowers more brilliant, but they do not die with the first frost or cold wind in winter. When the prospect without is dreary, we can still look to our fern-cases or window-boxes or hanging-baskets and behold in them objects of increased admiration, because they are so charming in their contrast with the desolateness without, and are genial remembrances of greener days gone by.

"The universal popularity of Window Gardens, whether large or small, simple or elaborate, is the evidence of a growing taste for flowers and ornamental plants in all circles of society. We have only to notice in all our large cities, towns and villages, how frequent window decorations have become, sometimes seeming as if not a house was without them in many of our most fashionable avenues. In European cities the citizens indulge even more extensively and passionately in their plant pleasures than we do; every home is decorated from the workingman's window, and its few flower-pots of balsams to the fernery and tile jardinieres of the aristocratic mansion.

"'In Brussels,' says M. Victor Paquet, 'the balconies are turned into green-houses and miniature stores gay with brightest and greenest foliage. And in Paris there are many contrivances in use by means of which the rarest and most beautiful plants are produced. Passifloras cling to columns in the upper floors, water plants start into blossom in tiny basins curiously contrived in solid brickwork, and limpid water flows down a miniature rockery from whose crevices start up ferns and lycopodiums.'

"The rooms of the Parisians are gay with flowers replaced freshly every day, and in the denser parts of London, black with its smoky atmosphere, may be found some of the choicest of plant-cases. An English writer visiting such a locality once was ushered into a room where the darkness was almost felt, but every window was occupied with a plant-case in which plants were growing in an astonishing manner. Ferns of the greenest and freshest hue, orchids never surpassed, were there in redolent health and vigor. He was told to his great surprise that the cases were hermetically sealed, and that no water had been administered for months.

"There is a never-failing charm, too, in the outside decorations of the house or Window Garden. The trellis-work of the balcony may be made ornamental with green foliage and its homeliness tastefully hidden. The ivy will cover the unpainted wall and make it still more artistic. The verandah can be soon covered with the most luxuriant of profuse blooming creepers. Unsightly objects, bare gardens, and plain fences can all be relieved. In fact no home is devoid of the means of tasteful decoration. And so many and easy are the forms of window embellishments at the present day, that we know of no better device for increasing the elegancies and attractions of indoor life.

"Window Gardens, too, are educators of taste. In our large cities it is noticeable that the the fair occupants of the wealthier homes are themselves practically interested in window ornament. It is quite the fashion for their own hands to fill with pretty plants, of their own arrangement, jardinieres of costly tile, or else place them in baskets of rustic yet most artistic make. After a little time when they have grown to appropriate height, or the drooping plants have attained sufficient length, the full beauty of the Window Garden is apparent. Visitors are entranced with their wondrous beauty and are free with their exclamations of delight. The passer-by on the side-walk stops for a moment to look lovingly upon the cozy bower of bloom just inside the glazed window pane. When passing away, he still keeps it in mind, and long afterwards cherishes the memory of this artistic beauty spot. Flowers and plants by their beauty and fragrance, are always in harmony with rich and costly furniture, pictures or statuary.

"A simple flower-stand near the window, a hanging basket over head, all shedding their perfume, add day by day brightness to the other genialities of the home; and all through the wintry months, furnish food for pleasant thoughts; a single plant of the Ivy trained on the wall, or festooned over the window, is a joy to all beholders.

"Flowers, plants too, often supply the place of children in bereaved homes; for their soul-refreshing, heart-inspiring, and eye-brightening influences, are joys to wean the thoughts from pain or sorrow.

"Some mother perhaps cherishes fondly in her home, a few beautiful Fuchsias placed on a stand upon the window sill. She never tires of looking upon their graceful shapes, or the brightly colored jewel blossoms drooping downwards, for they remind her of the delight they once gave her little child before it went to its angel home. The value to her of these treasures, with their brilliant colors, and snowy waxen petals, rose-colored or purple corollas, cannot be measured with the ordinary expression of language.

"Among the most gratifying signs of floral taste, is the evidence of their introduction into school rooms. The teacher is perhaps fond of them and knows their influence. Their very delicacy, forbidding rough handling, serves to impose a wholesome restraint upon the children; if ever they are tired with their study, a few glances at the window-sill, and its pots of bloom, wreathe their faces with genial smiles and they go to work again with willing hearts and refreshed thoughts. The curiosity of children, too, is proverbial, and many a girl learns more of nature from the living specimens before her, than from the dry details of her book of botany.

"Not less important can we consider flowers and plants, as the best and most practical educators of healthy sentiment. They are always suggestive of purity and refinement. Nothing is so conducive to cheerfulness, or creates efforts to make home attractive, like their presence in the household. Constant association with such objects of floral beauty, fits people to rank high as useful members of society. A floral writer has already expressed these sentiments in a most charming manner:

"'They are a spring of sunshine, a constant pleasure. We would have flowers in every home, for a sunny light, for their cheerful teachings, for their insensibly ennobling influence.'

"As an amusement of the invalid, Window Gardening through the form of plant cases, is very appropriate. We call to mind an instance of one compelled in consequence of a bodily infirmity, to take up a residence in the city.

"He had enjoyed for a long time in the country the pleasures of the green-house, and endeavored whilst in the city to replace it once more. A small but inexpensive three light green-house was erected in the back yard, open, airy. There he gratified his taste for floriculture subjects by gathering together an interesting collection of valuable ferns and orchids. In an upper room was arranged a capacious fern case, and there the invalid would spend many days during the winter recumbent upon the sofa dilating upon the pleasures of being able to watch the growth of a vigorous intertwining mass of curious forms of foreign ferns, many of them productions from distant portions of the globe, New Zealand, India, Mexico, Japan.

"In our country homes, how common to see the plant-stand before the window with its dozen or so pots of Geraniums, Primrose, Azaleas, &c., while an invalid sister or mother reclines in the easy chair, watching it for hours with delight, unmindful of the snow driving past the window pane.

"The refining influence of the flowers is no where more apparent than in our humble cottage homes; for there the young maiden cherishes her few pet flowers, with a deeper affection and truer love than even the skilled gardener. There is something so attractive in their very looks that none can resist their sweet and winning influence. Perhaps it may be because so few are disappointed in them, or expect them to yield a measured commercial profit. So no one's enthusiasm is gauged by dollars and cents.

"In some of the strangest of conditions, there is often the most delightful display of floral bloom; the prarie log cabin may often contain a flourishing window garden, with as choice specimens as that of the rich amateur.

"Few are so poor but they can find room for a few boxes and pots to grow plants and beguile the long winter hours. They should be in the window of every sitting room, in every school-house, that children, as well as parents, may be educated to the appreciation of their beauties, and their taste more readily cultivated and encouraged.

"The effects of window gardening become more clearly seen each succeeding year. Many who have not the slightest idea of how a plant grows will obtain from the florist a simple basket of Ivy. Once living, it needs little further attention; yet the eye of the proprietor often wanders upward to it, and as the tendrils reach out, twining around the basket, upward or downward, his senses are gradually interested, and in time other plants follow, who in turn are studied. These tempt others, mere visitors, to try the experiment, and so the contageous enthusiasm for flowers steadily spreads. In every state the love for flowers and plants is on the increase. The business of our florists is three times larger than five years ago. Our cottagers are devoting more time to the ornamentation of door yards with these floral gems, and the window-sill of many a cot has its sugar bowl or cracked tea-pot, doing duty for a flower-pot, while we have often seen the discarded fruit can, in some wayside ranchman's cabin in the interior of the Rocky Mountains, blooming with balsams or portulacca. All classes respond to but one sentiment, 'Flowers give us Flowers.'

"Beside the delights of window gardening in opening new resources of amusement, recreation and instruction, which nothing else can give to the home circle, is the added advantage that it is easy; but very little time is required for their culture. Some window gardens are elaborate, expensive, and are suited only for those of scientific taste, but by far the most successful are those in our every day homes, with the simplest of flowering plants. There are many more easy plans for house gardening than difficult ones. The little physical exercise needed, is a relief to mental pursuits, and a variety to domestic duties, while the daily growth of each plant and flower, which constitutes the chief delight of the young florist, and the beauty and elegance of his little garden, form a crowning gratification for his well spent hours, and stimulate an honest and desirable pride.

"In some of the poorest quarters of London there may be found at any time handsomer Balsams than any professional ever raised, while some of the finest new Chrysanthemums ever produced it is said, have originated in the window garden of some of these humble citizens.

"A quaint old English writer calls this form of home pleasures, '*Fenestral Gardening*,' (*Hortus Fenestralis*) expressive of the decoration of rooms with green drapery from the garden. Many are deterred from the commencement of a window garden, or the care for cases of plants, on account of the supposed trouble.

"There are really but few requisites to success. If any are ignorant of the plants or their proper arrangement, they may easily learn how many simple forms may be adopted to make every house garden alive with plant beauty, and yet require only a half hour per day. A hanging basket or two, a window box or row of bulb glasses, a wardian case or fernery, all are easy. Once set, they need little care. In the other departments of propagation and culture, a little time, patience, and, best of all, trials of experience, will soon render the knowledge easily acquired.

"To have some few choice, fragrant, beautiful flowers in mid winter when there is no green thing in sight, save the dense evergreen of the forest, or the garden hedge of spruce, prompts many to an assiduous care, and a hearty devotion to such plant treasures. Yet the recompense is worth the labor.

"The matchless beauty which nature once bestowed on the gardens without, is now restored and perpetuated within; and to many a fair finger deftly handling the tender plant, the exquisite embroidery of the leaf, or coloring of the flower, will form objects for the eye to rest upon with unwearied delight."

The limits to which this paper is necessarily confined will not permit of considering in detail the various topics pertaining to this interesting subject. The intention is to refer to a few primary and general principles which may be of use in all homes where this beautiful attraction is encouraged. Those who need specific and full instructions upon the range of subjects embraced in Window Gardening, will do well to supply themselves with the work above referred to.

Location has much to do with success. An exposure or situation where the rays of the sun, from early in the morning until one or two o'clock, is better than any other. But it must be remembered that there are plants which love shade as Pansies, Sweet Violets, etc. and must not be placed directly in the sun's rays; then there are some, as Roses, Verbenas, Heliotropes, Geraniums, Daphnes, Azaleas, &c., which must have the direct influence of the light to flourish luxuriantly. The best exposure is a south, or south-eastern window, next an eastern, and then a western window. A northern window will do for Pansies and Sweet Violets. Camelias will flourish in a cool, moist atmosphere with but little sunshine. To most plants sunshine is a necessity of healthy growth; the more they have the better; at night they should be kept in the dark, and as all plants are cooler at night in Summer than in the day time, those at the window should also be cooler. It is claimed for plants, that they need sleep or rest from the strong and forcing light and heat of the sun, and this they obtain at night. It is not proper, therefore to keep the temperature at night too high in a room where many plants are kept; unseasonable light is also exhausting to them. Neither should plants be allowed to chill. They may be easily protected from frost by newspapers. A medium temperature is best; extremes from a high to a low range are very injurious to plants.

The size of windows is also to be considered. Windows differ so greatly in size, that each person must shape their calculations according to their conveniences. In a great many instances a sill or shelf on the outside of the window will be of great use, and a corresponding one inside is necessary. If many plants are grown, the larger the window the better, within bounds, of course. Bow windows are the best, and the larger the panes the better. On the size and kind of window depend very much the selection of plants. Low windows are adapted to climbing vines which may be trained upward over them.

In the general management of in-door plants the following essential rules should be remembered:

1. Give them plenty of light during the day and darkness with a cooler temperature at night.

2. A good supply of fresh air when the sun shines brightest and warmest; in mild days the upper sashes may be lowered a little, so that the cool air will blow over the plants instead of directly upon them.

3. Perfect cleanliness, which is very important, for if the plants are covered with dust they cannot grow, and will frequently die; their leaves are their lungs; frequent syringing will keep the leaves moist and clean.

4. A proper amount of moisture; a dry atmosphere is fatal.

5. A good compost or soil in which their roots can luxuriate, and send forth vigorous branches, leaves and flowers.

6 Get healthy vigorous plants, to start out with; plants that have been blooming all through the summer or for several months previous will not do well; new ones are best, or plants that were used the previous winter, and have rested during the summer, will also answer, but in general it is best to get plants.

7. Keep only a few plants; too many in the window will make close crowding; pots should never be set two or three deep on top of each other.

8. A uniform temperature of sixty to seventy degrees in the day time and forty to forty-five in the night should be steadily maintained.

9. Different places should be provided for different plants. A sunny window with a temperature of forty-five to fifty degrees will suit Roses, Geraniums, &c., best; Begonias, Coleus, Cissus discolor want a still warmer place of sixty to seventy degrees, and yet but little or no sunlight directly upon them. On the other hand Heliotropes and Bovardias want all the sun possible, with a temperature in the daytime of sixty to seventy degrees.

The plain and succint directions given upon the general management of Window Gardens, by Mr. Williams in the work referred to, are so apposite and useful, that we cannot do better than to adopt them here:

Sunlight.—Plenty of sunlight is the gardener's first requisite. If the location for this purpose is not right, the plants will not be healthy. If the plants are well placed in a good light, then the pots must be turned occasionally so that all sides may receive it equally. It will be well also to put flower stands or racks of pots on wheels, so that the whole may be changed at once, or wheeled away, if the room needs cleaning. Care must be taken to avoid rapid transition from darkness to the light, for sudden and violent changes are as trying to plant life as human life. Too much warmth will destroy tender leaves nearly as soon as too much cold. Then again, plants should be placed as near the light as possible; in rooms far away from the glass window, the plants will be weak, pale and of spindling growth. If they could receive light directly from overhead, they would be better than from the side. The ordinary variations of day and night have their corresponding effects on plants, since it is said that they inhale under the influences of light, and respire in the dark. The glass of the window should also be rubbed or washed clean. The most gaily colored flowers will be produced at a south window, but a north window has its advantage, in that it may be used for plants already in bloom, and will keep them much longer in perfection. For north windows, Camelias, Cytisuses, Primulas and Alpine Auriculas, will find the cool moisture they need, and will bloom in great beauty if properly attended to and kept from frost. Bulbs, if placed in the sunlight, will have their brilliancy of color greatly enhanced, yet if not changed occasionally in position, their flower stems will bend over and have an unsightly appearance.

Temperature.— The greatest success will be found to come from a uniform temperature of forty-five or fifty degrees at night, and sixty to seventy-five degrees in the day time; eighty degrees is too hot except for only some plants of semi-tropical character. Under no circumstances should the temperature go below thirty-five degrees. If your living rooms, where your plants are placed must be considerably warmer than this in the former part of the night, then set the plants on the floor, shade from the light until the time of retiring, and then return them to the window sill or flower stand. Perhaps from no other cause than this, too great heat, during the day and long continued at night, our city grown plants grow so sickly and lanky in appearance. Once or twice a week will be sufficient for turning pots around. If this little item is not attended to, you cannot grow finely formed plants, and more than half their beauty depends upon their shape. If a closet or small room opening out of the sitting room can be devoted to plants and yet be well lighted, they will flourish far better than in the common room, for they can have a cooler atmosphere and less dust.

The same object could however be accomplished in a far more tasteful manner by enclosing the window recess with another glass window or partition. The outside glass protects the plants from the cold, the inside ones from undue heat and gas, while between the two there is a happy mean in which plant culture cannot fail to be successful. If however this is not done, and the window panes are made of double glass there will be little danger of their freezing on a cold night. It would be well to have one pane fitted with a hinge, which can be opened to air the plants. But to avoid this a heavy curtain can be placed at the window, and pulled down at night, to protect from cold air, while newspapers may be pinned around the plants to protect them from the bright light of the evening. The amateur must also study the characteristics of his plants, for one temperature will not answer for all. The Rose needs a cool atmosphere, yet moderately moist. The Fuchsia is fond of both warmth and moisture, but needs occasional shading when the sun is too hot. The Coleus prefers plenty of heat or moisture, and would be satisfied never to have the thermometer go below seventy degrees by night or day. The Geranium seems to accommodate itself to all circumstances, being the most easily grown of all window plants, and apparently needs only plenty of light and air, and average warmth.

Plants at Night.—Plants need rest. Uniform darkness at night with lower temperature, is one of the conditions of treatment, but sometimes there may be a sudden change of temperature in the outer air, and in consequence thereof some one or more plants of the window garden may be frozen. Do not throw them away, but cut the branches back as far as frozen, or near to the soil, then water slightly and do not let the plant get quite as warm as before; if it has any life it will soon show buds and branches. Plants should be treated very much like human beings; a frosted finger should be warmed gradually, so should a frozen plant. Some plants if frosted, like Fuchsias, will sprout from the roots and make a strong growth; others will send out strong, healthy flowering branches from the stem near the roots. A very simple plan to restore frosted plants is to transfer them at once to a dark cellar and shower them plentifully with water; keep them here two or three weeks and they will gradually recover their health again.

Another point is often discussed, whether plants are injurious in rooms at night. We think it unwise to have too many in a room; a few here and there are of little influence. Strong scented plants are injurious to have in the room at night. The Tuberose, Hyacinth and Jessamine, &c., are too sweet to be allowed to remain in a bedroom at night and should not be patronized for this purpose by invalids. The sensations of the individual are often a good guide. After sleeping in a room with plants, the morning finds the sleeper inactive, feeling as if his night's rest had been heavy, the air of the room also does not seem pure, and the perfume peculiar. All the indications are sufficient to show the air is vitiated, and fresh air is needed as much by the individual as the plant.

Fresh Air.—Ventilation is absolutely necessary; therefore give it. Whenever the weather is mild open the window. Too little fresh air and too much warmth are formidable obstacles to success in house gardening. Plants that are kept shut up in warm rooms become very sensitive and are far more liable to suffer from a sudden fall in the temperature; but if they are frequently exposed to the fresh air they are better able to bear these changes of climate which often occur so unexpectedly. Those who live in close, heated rooms can never make their flowers bloom in winter with any vigor. Some think that any atmosphere not inconvenient to men and women is good enough for the plant. It will live just as the human being lives, but it does so in sufferance rather, for it will not grow and bloom in perfect beauty. A very few handsome flowering vines are much to be preferred to spindling plants, pictures ot misery, like their owners, overheated and crowded into close, unhealthy unventilated quarters. In our fever to provide sufficient warmth in our rooms against the cold, we stop up every crack in our windows, every crevice of our doors; then with furnaces, grates or stoves at almost fever heat we get warmth enough to bid defiance to the chilling atmosphere. Rarely are we satisfied with a temperature in the room of less than seventy-five degrees and this must be constantly maintained from early morn till late at night. A draught of fresh air would quicken your blood and put a little more spirit into your countenances; still you aim to avoid it. Yet for the sake of your plants do it a least, once a day. Throw open the doors and air the room thoroughly. This can be done at time for meals when it is usually vacant. The windows should not be opened directly upon the plants. Some other window or door away from the plants may be opened. It should be done also at the middle of the day when the outer air is mildest.

Cleanliness.—Here close attention is again required. Plants require regular care. They cannot be watered and cared for once a week and the rest of the time left to themselves, but they demand a daily amount of time to be spent upon them. Every morning when house cleaning is in order, the plants must be watered and cleaned. You will see how necessary this is if you look at the nature of the plants, how they live. Like our skins, the leaves of the plants are perforated with hundreds of minute pores through which they breathe, exhaling oxygen and inhaling carbon, and also giving out and inhaling moisture. If these pores are filled up with dust the plant cannot perform these functions and its life either ceases or stands still; it is not possible for it to grow or bloom. The dust of our living rooms is very injurious to the health of every plant. Unless it is removed, you may as well give up all hope of making your window favorites succeed. Frequent washing and watering are absolutely essential. For close handling of leaves, a soft sponge is of great service, for it can be used in the parlor without danger of dripping from the watering-pot. Wash each leaf separately and see that both sides of it are clean. To shower a plant turn it sideways over a tub of water or a sink; sprinkle it thoroughly with the watering-pot. If the plants are too large to handle in this manner set the pots or tubs into a larger one and either sprinkle or syringe every branch and leaf. You must improvise summer showers if you would induce summer growth. It is not enough to water the earth in the pot. The whole plant requires it. Frequent waterings are the most beneficial culture that you can bestow upon your plants. To be sure they are not easily given and will entail upon you some work.

When sweeping and dusting your rooms, throw newspapers or a light cloth over them; this will prevent the dust from settling upon the leaves, and help materially toward keeping them clean.

Whenever a warm rain falls, and the temperature stands at fifty or fifty-five degrees, set all the plants out of doors, and they will be greatly refreshed and strengthened. It does not follow, however, that the whole plant is watered by being thus placed out doors; the leaves of the plant may be broad and shield the pot and roots; so do not forget to give these a chance also. If the leaves of the plants are very dirty, warm water with a little soap and the use of the sponge or syringe, will remove all dirt. Exposure to the fresh air is not as dangerous as many would suppose, provided the temperature is mild. They are, in fact, benefited by such exposure and become far more hardy and able to resist sudden changes of temperature, much better than if kept constantly confined to the room.

Very few have any idea of how fast the dust accumulates in a room; it is in fact one of the greatest enemies the housewife has to contend with. A short time only, suffices to see the leaves of a plant covered with dust; if it is not removed, they soon get brown and wither; and it is really delightful, after giving them a good washing, to see how bright and shining are the leaves and how greatly they have been invigorated.

Watering Plants. — When shall I water my plants? is a vexed question, asked perhaps more frequently than any other by the beginner. This depends entirely upon the nature of the plant, for some need more water than others, and yet a soil thoroughly wet is totally unfit for plant-growing. The real idea each cultivator should aim for is to supply the plants with water, which may drain rapidly through the pots, yet sufficient be retained to give a good moist soil for the plant to live in. If the water passes away rapidly it will need replacing frequently. It is generally a sign of health when the soil is well drained and the plant uses up the supply of water quickly.

Watering should be supplied with a careful hand, for many parlor gardeners have an unrestrainable belief in the hydropathic process. To them there is only one orthodox rule: if the plants will wither up or are troubled with insects aud do not grow as healthy and freely as they might, they drench it with a flood of cold water; so it is a fact, that more plants perish in the hands of the inexperienced, from having too copious a supply than too little. There are others again more cautious in their applications of water, who are, on the other hand, totally heedless of drainage, and let the water stand in the saucers under the pots, or in boxes without drainage, causing mould and sogginess of soil, rendering the roots weak and unhealthy.

The purposes of watering should be better understood. 1st. Water supplies to the roots fertilizing matter, contained in itself, and 2d. It converts the nourishment of the soil into a liquid form more readily fit for absorption by the roots. The roots can obtain it only when the soil is dampened.

Never give water when the soil is moist to the touch, but wait until it is dry.

Few plants thrive if water is around them constantly; yet Lobelias, Callas, Ivies, etc., are very thirsty and like to drink at their own will. Indeed they will not bloom or grow well unless you allow them so to do.

The healthiest plants require water the most frequently; and yet it may appear a contradiction to say that the plants which contain the most watery tissues, grow in the dryest places. The Cacti often supply moisture to the wild cattle of the plains of Mexico; the animals break through their thorny exteriors with their hoofs, and then eat the moist morsels contained within, which quench their thirst.

Water, cold from the well or pump, is not suitable for plants, unless of a temperature of sixty degrees. Rain water is best, for this is supposed to contain some little ammonia from the sky.

The best rule in all cases is to use water warm to the hands. Some florists advise water no colder than the atmosphere. We believe it generally best to use warmer. In cool mornings it should be lukewarm, say not under fifty-five degrees. Some cultivators say they have used hot water for sickly plants heated to a temperature from two hundred to two hundred and fifty degrees, and have believed this to be the cause of their subsequent luxuriant growth and production of flowers of the greatest beauty; but trials like this are not to be encouraged, and warm water of seventy-five to one hundred degrees will do just as well and have far less danger from scalding. Over one hundred degrees is neither necessary nor safe. A lady is said to have once watered her plants with the tea that remained in her pot after the breakfast was finished. Her plants grew in wonderful beauty and luxuriance, and she attributes it to the magic effects of the tea; yet she has forgotten it was better due to the warmth of the water than any fancied virtue. Some plants demand more water than others. Fuchsias, for instance, while in bloom, often require water both morning and evening, and nearly all plants desire more when in flower than at any other time. The supply of water must be regulated according to the demand of the plants. Calla Lillies will absorb water two or three times as quickly as any other plant of the Window Garden. If rainwater cannot be easily obtained, and hard water is the only source at hand, add a little soda to it and let it stand for a while; use a small piece, say a small nugget of the size of a pea, to every gallon; on that pour about a pint of boiling water and then fill it up with cold water. It will be quite warm, and a thorough drenching overhead and in the pots will vastly improve their color and health. A drop or two of hartshorn will also correct hard water somewhat. In watering, never wet merely the surface, but moisten the whole ball of earth in the pot. If the ball should yet be very dry, set the whole pot in a pail of warm water till it is soaked through. The morning is the best time of the day for watering. A common hand-brush made of broomcorn dipped into warm water and shaken over the plants will imitate a summer shower, but its tiny drops may spatter against the window glass. A toy watering-pot, such as is used for children, is very useful for Window Gardening. If oil cloth is laid under the stand it can be used without much if any injury to the carpet or furniture. Care should be taken that the pots have good drainage, for then all surplus water will run into the saucer, which may be emptied as fast as filled. In warm mild weather when plants absorb a great deal of moisture it will do no harm to leave a little in a saucer. Among other details to be observed in watering, the following items of caution are to be observed: Some plants should never be wetted on the leaves. Take the Begonia Rex, whose foliage, so large and grand has an exquisite coloring; if its leaves were to be sponged with cold water, and the plant left out on the balcony or open air it would probably die very soon; but a Camelia can be treated the same way and not be injured in the slightest. The reasons for it are good. The last plant has a hard shiny leaf, which can resist rough treatment; but the other has a succulent tender leaf easily affected. The novice then may gradually find it true that plants with soft porous and hairy leaves should be very cautiously wetted overhead, but plants with hard varnished leaves may be watered frequently. Tepid water should be invariably used even down to the height of Summer. If plants get infested with vermin, a sponging with soap and water made into a lather, will clear them. Then follow with clear water to remove the soap. It is also a good rule to observe that the colder the weather the less water must be given; and when plants are at rest, done growing, they need very little indeed.

Plants in cases may be watered once a week, for evaporation there is confined, but in open rooms once a day is sufficient. Some plants, who delight in very moist situations, need it twice a day. Never water when the sun is hot.

If the soil of the pot is too hard, loosen it a little with a fork, or plunge it into a tub of water. Take pains to have good drainage, and beyond this little trouble will be experienced.

The philosophy of watering is worth studying. Plants are constantly throwing off or evaporating moisture from their leaves, and at the same time the roots must be taking up an equal supply. If then on examining the soil in a flower-pot, you discover that it is moist for an unusual long time, you may be sure that something is wrong, either the roots do not take it up readily, or drainage is imperfect Healthy plant action needs air as well as moisture. A soggy soil excludes air, and as a result, our plants soon show drooping leaves and unhealthy branches. Drainage is to plants what digestion is to the human system, keeping everything in perfect action. Water and air enjoy a healthy circulation unimpeded and plants which are growing freely and vigorously with strong roots, will take up the moisture of the pots regularly. Mr. Meehan, who has studied plant physiology more thoroughly than any other American, sums up this subject in the following concise paragraph:

"A wet soil is totally unfit for plant growing. A plant standing twenty-four hours in water is irreparably injured. A Hyacinth, to be sure, will live one season in water; but all the matter of the flower which goes to water is prepared the year before, and after flowering the bulb is exhausted and almost worthless.

"A good soil for plant-growing, therefore, is not one which will hold water, but one in which water will pass away.

"The soil itself is composed of minute particles, through which air spaces abound. The water must be just enough to keep these particles moist, and the air in the spaces is thus kept in the condition of moist air. The roots traverse these air spaces, and it is, therefore, moist air, which roots want, and not water.

"If it were water simply which plants wanted, we should cork up the bottom of the hole in the flower pot, and prevent the water getting away. Instead of this, we try to hasten the passing of the water through as much as possible, by not only keeping the hole clear, but often by putting broken pieces in the bottom to hasten drainage. A plant will generally be the healthiest, therefore, which wants water the oftenest. If it does not want water, it is in a bad way. And more water will make the matter worse.

"How often to water them, will be according to how easy the water passes away. If, when you pour water on earth it disappears almost instantly, it would be safe to water such plants every day.

"The constant aim of the cultivator should be to keep the soil of such a consistence that a moist atmosphere shall always be present in the air spaces existing through it."

Moisture of the Atmosphere. — The atmosphere of our houses, as we have intimated before, is not only too dry for successful plant culture, but it breeds insects of various kinds which will injure their growth.

We have noticed that plants kept in kitchen windows where the air is charged with moist vapors from the boiling of water over the stove or range, and where the outside doors are frequently opened, and fresh air supplied, will often develop into surprising luxuriance and beauty. We can call to mind even now a farm kitchen in the oldest portion of our most northern states, where Roses, Carnations and Verbenas, grow finely, and are covered with a summery profusion of buds and flowers. These are usually the most difficult plants to bring into bloom in parlor windows, because they are apt to be so infested with minute red spiders, and the green aphis, scale or mealy bug.

It is the moisture in the air which tends to restrain and drive away such disagreeable intruders. The heated air of the house can be kept moist by placing an evaporating pan upon or in our furnaces, and over our stoves we can place a large fire-proof dish that must be daily filled with water.

If the surfaces of the soil in pots is covered with moss, it retards the evaporation of water; this practice is generally advisable only for those plants which require much water, such as Calla Lillies, Fuchsias, Camelias, &c. Pots that are imbedded in moss are always kept moist, and if a table is constructed just the height of the window, with a rim fastened around each side three inches in depth, and the whole lined with zinc, the pots can be set in it, and the moss stuffed in on all sides. When watering is needed, set it back from the window and sprinkle with a fine watering pot.

The Soil.—The most easily available material for a compost by the ordinary gardener, will be rich loam, sand, and thoroughly decayed cow manure. This should be mixed in the proportion of one half of the loam to one quarter each of the sand and manure. Leaf mould is also another grand material which every plant loves to grow in, and it will pay to secure a good quantity of it. The older and more decomposed the manure and leaf mould, the better they are, and every plant grower should keep a well prepared compost heap for his plants. A good compost, when all the material is handy, is composed of one fourth of the above elements of leaf mould, sand, loam and manure. To those who live in cities and can not get this conveniently, it is best either to buy your plants already potted, or go to a good florist and buy a good quantity of right compost; he can usually supply it at a cheaper rate than it can be purchased any where else.

Keep this heap well filled, and no one must fail to bear in mind that the soil of every one of his pots needs changing and replenishing, or else it becomes exhausted, and the plants dwindle and languish for needed food.

Garden loam is often used by those in the country and found to answer, but if it should contain any clay, a little sand must be added. The sand itself is of no fertilizing effect, but is valuable in assisting the æration of the soil and helping the drainage. Well rotten turf is another handy and valuable material, containing considerable quantity of vegetable mould. If used, put the coarser pieces at the bottom along with some pebbles or broken pieces of crockery, then fill in the finer mould to about half an inch from the surface. The soil must not be allowed to cake up, but be occasionally stirred up deep, so that air may have access to the roots.

Leaf mould is more highly prized by gardeners than anything else that can be procured. Every autumn the leaves are gathered in heaps, wheeled by the barrow load to a good location, and there left exposed to the rain and the action of the weather for sometimes two or three years. Here it decomposes and becomes rotten. Then it is mixed with good turf mould, also left to rot for a year or two, and finally chopped up; then add the sand, decomposed manure and some peat well minced to small pieces. This is considered the very best material for pots, or borders in green-houses or conservatories. A good pile of it is always maintained. It is rather an advantage than otherwise to have a few lumps in each pot; they prevent the soil from becoming too solid.

A compost for Camelias, Roses, Geraniums, &c., should be one part river sand, one part leaf mould, two parts turf or garden mould. For Cacti, use two parts coarse sand, three parts leaf and turf mould, one part peat, and a little broken plaster.

For Azaleas, Ericas, and most New Holland plants, take four parts peat, two parts sand, one part garden or turf mould one part leaf mould.

For drainage purposes, put in the bottom of each pot either a layer of powdered charcoal, or small broken peices of brick or old mortar to the depth of at least an inch; over this there may be a slight sprinkling of sand; still it may be omitted if it has previously been well incorporated in the compost. In general it should never be less than one fifth the whole material of the compost, and one fourth will be best in most cases.

Forest mould scraped up under the branches of pine or other forest trees, or the soil taken from under the sods of droppings in cow pastures, will be found useful in imparting a vigorous growth to plants.

Amateurs sometime choose earth from the back yards of their city residences; this is rarely ever suitable, and often its effects can be seen in the half dead and weak look of the plants, who seem to be languishing for nourishment. This soil is rarely fertilized, and usually is either the filling in from the street or cellar. It may be fit to grow grass upon, but not to put in the pots of house plants.

There are some plants which require an imperative admixture of peat and loam, such as Ericas, Azaleas and Daphne. There is no substance which can be substituted for it, and produce success. Earth for pots should rarely ever be sifted, put it in just as it is; lumpy and crude, so much the better.

In potting your plants and planting them out, be very careful to press the earth very tightly and closely around the roots and stalks of the plants; half the secret of successful pot culture lies in potting plants.

Hard wooded plants should be potted rather firmly, and soft wooded ones should be left rather free and loose.

In repotting plants, take the plant that is to be repotted, turn it upside down, with your left hand across the mouth of the pot, and the stem of the plant between the fingers, give the pot a few raps on the table, lift up the pot and you have the plant and the ball of earth in your hand.

Examine it carefully, and if any worms appear, pick them out, or if the earth is full of healthy roots, and they are matted around the sides of it, the plant requires a pot one size larger than that in which it has grown.

Place the ball of earth and the plant directly in the center of the new pot, and fill it up all around with fresh soil, pressing it firmly down either with the fingers or a flat stick; cover the "ball" with fresh earth half an inch in depth; strike the bottom of the pot several times against a flat substance, and again press the soil tightly around the roots. Loose planting is a fruitful source of the non-success attending the gardening of amateur florists. Place your plants in the shade for two or three days to allow their roots to become accustomed to the change of quarters. A healthy, abundant-rooted plant, requires a pot one size larger, but if the plant you turn out should not show its roots on the outside, it needs no change of quarters, still it may need fresh soil, and if the earth seems poor and gritty it is best to give it.

If in examination of your pots you should find some plant injured by injudicious waterings, its roots rotten, and soil soddened, then cut or tear away the decayed parts, turn out the wet soil, take a pot of the smaller size, and with a lighter soil give it another chance for life, watering it sparingly until the foliage shows its return to health and strength.

Never pot a plant that has its ball of earth quite dry, for you cannot give it water afterward. All the water you pour upon it will run down the fresh soil at the sides of the pot, leaving the plant to perish with drought. Sometimes in potting plants, you will find a large brown root coiled up in the pot like a snake. Cut it off close to the main root and put this plant in a pot of smaller size, and very soon fresh and more nourishing roots will take its place. Such roots are often found in pots of geraniums. This piece of root can be made to grow by cutting it into three inch lengths, and planting them in pots of sandy loam, leaving a quarter of an inch of the root uncovered, and keeping them warm and moist.

In placing plants in pots in the open air, either sink them in the borders or on the grass. Be sure to scatter coal or wood ashes underneath them, to prevent worms from entering the pots and the soil from becoming clogged.

Fertilizers for Stimulating House Plants.—All plants will grow much finer if stimulants are given, say at least once a week.

A very fine liquid fertilizer can be made out of horse and cow manure. Take an old bucket for the purpose, put into it several shovels full of manure, to which add one pint of charcoal dust, this neutralizes its odor, add to it plenty of boiling water, let it cool, and apply to the plant. It should not be given too strong, but about the color of weak tea. The bucket can stay filled up with water for six weeks or two months as it is needed, then throw away its contents and begin again.

Guano water, a decoction of Peruvian guano, makes a good stimulant. It should be applied once a week to the roots, taking care not to touch the leaves with it. To one gallon of hot water, add one large tablespoonful of guano; stir until it is dissolved. Hen manure may be substituted and used in about the same quantity.

When used carefully, either are excellent, and give the plants a bright vigorous green.

Ammonia water stimulates growth very satisfactorily. Dissolve one fourth ounce of pulverized ammonia in a gallon of water, and it will prove more grateful to the plants even than rain water which also contains ammonia. A teaspoonful of aqua ammonia added to a gallon of warm water will be of same efficacy. Flour of bone, when it can be obtained in the form of powder, easily soluble in water, is still more suitable, for it contains other elements of plant nutrition. Used in moderate quantities, not over a tablespoonful to a gallon of warm water, it will give the plants a healthy impetus; give a sufficient quantity to wet the whole ball of earth and pour off the surplus water that runs into the saucer. A special fertilizer used to advantage by some, is composed as follows: take of sulphate of ammonia four ounces, nitrate of potash two ounces, white sugar one ounce, add one pint of hot water; when dissolved, cork tightly and add a teaspoonful to every gallon of water used for watering; six or eight drops of this liquid can be poured into the water of a hyacinth glass, and the flowers will be much finer.

All these special stimulants must be used with caution, be well diluted, applied not oftener than once a week, and once in three weeks will be sufficient for the hyacinth.

Pinching.—Plants should be kept in good shape by pinching off their shoots from time to time, so as to avoid an outward spindling appearance; straggling branches can never be handsome; but if their shoots are nipped or pinched in every month or so, they will grow bushy and have more blossoms and leaves. Fuchsias and Pelergoniums are generally stopped once or twice before they flower. When the shoots have grown about three leaves their ends are pinched out; this gives three or four shoots instead of one, and increases the proportion of blossoms, but keeps the plant dwarf. The training of plants is also a matter of taste, usually the form of a half circle is most preferred. Fuchsias trained to single stakes and allowed to droop down are natural objects of beauty. Every gardener has his fancy. Nothing is so pleasant as to see a rose trained to stakes in pots bent completely back to the pot, in the shape of a semi-circle—every branch covered with buds just ready to bloom.

General Suggestions.—1. All plants have a season of rest; therefore discover what season is peculiar to each, and transplant at that time. 2. The best time for taking cuttings is when the plants are in their most active state of growth, and this is before flowering. 3. Profuse bloomings exhaust the strength of plants, therefore cut off all flower buds as soon as their petals fall, and do not let the seed pods mature unless you desire to raise seeds. 4. All bulbs and tubers should be planted before they begin to shoot; if suffered to form leaves and roots in the air, they waste their strength. 5. Never remove the leaves from bulbs after flowering until they are quite dead. As long as the leaves retain life they are employed in preparing nourishment and transmitting it to the roots. 6. Window plants are more liable to be injured by frost than plants in the ground, because the fibres of the roots cling to the sides of the pots and are more quickly affected by the chilling air. 7. The faster a plant grows, the farther apart are the leaves, the more distant the side branches, and the more bare appears the stem. Richness of foliage can never be attained when leaves become thus scattered. By keeping a lower temperature, especially at night, there will be a slower and more desirable growth, and couducive to compactness of habits in plants. 8. No plants can bear sudden contrasts of temperature without injury, therefore bring nothing directly from a heated room to the cool open air. 9. By checking the growth of leaves and branches you throw more strength into the flowers; this is why the terminal shoots of many plants should be pinched off to increase their vigor. 10. Avoid excessive heat. Plants often languish in a hot temperature while their owners cannot imagine why they do not grow, forgetting that the atmosphere is already too warm for even human beings. Suggestions like these will show that although Window Gardens require some skill and experience in good management, yet there is nothing abstruse or difficult to prevent any one from undertaking the care of one which needs only a reasonable degree of thought and ttention to make it a constant delight.

TEXTILE FABRICS—WEARING APPAREL.

In **purchasing wearing** apparel, or the material out of which to make it, let it be borne in mind that it always *pays* to buy good goods; and in order to judge of the quality or value of the various descriptions of textile fabrics which are used in the manufacture of clothing, it is necessary to learn of what they are made, and the difference between a good article and an inferior one.

[*] The term "textile fabrics," if strictly interpreted, would perhaps only include such materials as are formed by weaving fibres of flax, silk, or cotton into linen, cloth or silk. By a little straining of the term, however, many other fabrics might be included, as, for instance, felt, oil-cloth, and cocoa-nut matting. In these articles we propose to use the more extended definition, so as to include the more important kinds of materials commonly in household use, not confining ourselves to those merely which are used for wearing apparel, but noticing, also, those which are applied to various purposes, such as bedding, curtains, and carpets. It is not our purpose to explain in detail the various processes of manufacture, except in so far as may be required in order to understand the peculiar qualities of each material, and how these must be considered in their treatment, in order to obtain the utmost durability of which they are capable.

A moment's consideration will show that silk and linen require different treatment in use, and that a course which would be strictly proper for one fabric, would, if adopted for the other, result in its utter destruction. When it is considered what an important place textile fabrics occupy in the household, it will at once be said that this is a matter of the utmost consequence, and one which deserves the most careful attention. The knowledge of the method determining whether the material is of good or of inferior quality is also essential; and we propose, therefore, to offer some of the more simple rules for guidance when purchasing.

The materials of which the more common fabrics are manufactured may be roughly divided into two classes, namely, those derived from the animal and from the vegetable kingdoms. Of these, characteristic examples are—of the animal, silk and wool; and of the vegetable, cotton and flax. Silk stands pre-eminent for lustre, beauty and fineness of texture, while woolen fabrics are justly celebrated for their warmth and durability. Next to these comes linen, which is finer and stronger than its humbler relative, cotton. Of these we propose to treat in the order mentioned, giving to silk that foremost position which it ought most justly to occupy.

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[*] Cassell's Guide.

As is well known, this beautiful material is the product of an exceedingly ill-favored caterpillar, which, after several transformations, eventually becomes a greyish white moth. This, however, is after its real work of utility is accomplished the "cocoon" of silk being spun while the insect still retains its original form of a caterpillar. When the cocoon is completed, the material of which it is composed is wound off. In this state it is exceedingly thin, and several fibers are united in order to form one ordinary strand of the thickness of what is usually called sewing thread or silk. The fiber thus wound is the best part of the cocoon, and this is often mixed with the inferior portions, which are known as "floss." A large cocoon will yield as much as six hundred yards of filament, and twelve pounds of cocoon will return about one pound of raw silk.

Before, however, the raw silk is fit for weaving, it must be subjected to certain processes in order to impart more firmness to its texture; and it is usually made into one of the three forms called respectively, "singles," "tram," or "organzine." Of these, the first is merely twisted raw silk, and, for whatever purpose the material is intended, it must undergo this process. "Tram" is formed by twisting loosely several threads, which when combined, are mostly used for the "weft,' or transverse threads forming the cloth. "Organzine" is produced by a process similar to that used for making rope, but of course of a much more delicate fashion, the combined strands being twisted in opposite directions. This material is principally used for the warp, or longitudinal threads of the fabric. Besides these varieties, there are others, such as that denominated "sewings," which are made up of several threads, and prepared with a particular view to this purpose to which they are afterwards to be applied.

It would be beyond the intended scope of these articles to describe the various processes of weaving adopted in producing the several fabrics which are made from silk—such for instance, as plain or striped—while many, to which the most fanciful names are applied, as "Persian," "Gros de Naples," &c., differ only from ordinary plain silk either in the fineness of the texture and thickness, or the peculiar qualities of the material used in their manufacture. We will therefore proceed at once to offer some suggestions as to how those of good quality may be selected.

From what has already been stated, it will be seen that a good silk should possess three particular qualities: it should be soft, smooth, and lustrous. The better the silk the softer it will be, provided, of course, that it is closely woven, and not of a thin, flimsy nature. the readiest test of this quality is to sharply gather the material into folds across its width, and observe the angles produced. If the material be of good quality the folds will be soft in outline, but if these break into hard and soft projecting points, the sample should be at once rejected. It is a very instructive experiment in this particular to take in one hand a piece of some soft material, such as good flannel, and gather it up as before described; the folds will be round and soft; if a piece of newspaper or brown paper be then gathered together in a similar manner, it will be observed that a number of very sharp projections will be formed, of which particular notice should be taken. In the case of silk, if these angles are formed in the sample they will also occur in the dress which is made of similar material; and whenever this takes place the delicate fibers of silk will be broken, and holes will be made. Any one who has used a silk umbrella will remember that the first sign of cracking into holes appears in the sharpest folds, and the reason is that given above. Besides this test of softness, that of perfect smoothness should be applied. The material should be perfectly equal in thickness, and present no irregularity of surface. This is best tested by passing the fabric between the thumb and forefinger, when any imperfection in this particular will be manifest. An experienced person will be made to determine the quality of silk by this test alone, but to do so requires considerable practice. One of thc chief characteristics of silk is its brilliant gloss, and the lack of this feature in the material is a sure sign of its inferior quality. It is true that a kind of fictitious gloss is often imparted to a common quality of silk; but this is easily distinguished from the brilliant natural lustre which it ought to possess.

In old times a silk was often judged by its weight, a heavy material being a sign of its good quality. Thanks, however to the progress which has been made in science, and applied to silk manufacture, this test cannot now be relied upon. This will be evident if we relate what an eminent silk manufacturer recently told us, namely, that a pound weight of raw silk is now loaded with gum and dye, until it sometimes weighs as much as thirty or forty ounces. In this case, which may possibly be an extreme one, the purchaser is really buying gum and dye at the price of silk. But the mischief does not end here. The gum being stiff and inflexible, as the fabric is bent the strain on the fibre becomes more than it can bear, and the result is, that in breaking, holes occur, and the dress falls to pieces. This is why the fold test should be applied, as the more adulteration in the shape of gum the silk bears upon it the more angular will be the outlines formed.

It should be remembered, however, that it is very much more difficult to load in this manner the lighter kinds of silk, and that in general the greatest quantity of adulteration occurs in black, or very dark-colered materials. The raw silk varies but little, comparatively, in color. Some is nearly white, while other qualities are mostly of a pale yellow or yellowish grey.

Thus, it stands to reason that a heavier dye must of a necessity be applied to render the deeper tones, and this affords opportunity for adulteration on an extensive scale.

Hitherto we have spoken of ordinary plain silk, but besides this there are many varietiey of material, all of which are produced from the same fibre. Figured silks are produced by weaving threads of varied colors, so as to form the required patterns. The fabric known as satin is also derived from the same original source, but is so woven as to show the superb gloss to its utmost advantage. "Moire antique" is likewise a silk fabric, usually of a stouter character, and is "watered," that is, the irregular and somewhat more glossy lines are produced by a curious process of rolling under pressure. One of the defects peculiar to this material is, that the water-marks are frequently closer and smaller in outline at one end, or in parts of the piece. This defect is caused by a slight inequality of thickness, but except in rare cases, it is of little moment, and scarcely observable, except to an expert. The rules given for selecting a good plain silk are equally applicable to satin, figured silks and moire antique; if it be borne in mind that satin is naturally softer, and moire antique stiffer than the plain varieties of the same material.

It may be judged, from the foregoing remarks, that there is some difficulty in obtaining a real genuine silk, except the purchase be made at an establishment which is known to furnish a first-rate quality, and to charge a fair price for its goods. Cheap silks, in the ordinary acceptation of the term, there cannot be. It is true that a so-called silk may be produced at a ridiculously low price, but the purchaser will soon find to his cost that he has bought in the dearest possible market, and that, unless he is prepared to pay a high price for a good article, he had far better leave silk alone. Some of the older and genuine qualities would last for a generation, and these, though expensive, were cheap; while in modern times, when twelve yards of material can be procured for about thirty shillings, or even less, a dress becomes absolutely dear when its comparative worthlessness is taken into account. But the best of material will be spoiled if not properly treated when in use, and all silken fabrics require special treatment. In the first place, they should not be folded, or pressed tightly down in a drawer. If this is done, even the best material will in time be injured and creased. Perhaps the safest of all plans of preservation is to hang the dresses in a well-closed wardrobe, taking care to remove those folds and creases which are at all sharp or angular. We need scarcely observe that silks cannot be washed without great risk of spoiling them altogether. They may be cleaned by various means, but ordinary washing would be simply spoiling them. As a general rule, it will be well to intrust even the cleaning to an experienced dyer and cleaner, as such persons have greater facilities for properly performing the work; and in the case of delicate fabrics much depends upon this. Silk may, if faded in color, be re-dyed into a darker shade; and although it always loses a certain amount of brilliance in the process, a material of the first quality will present a good appearance until it is absolutely worn out, while that of an inferior sort will become shabby, even after a few days' wear. In concluding this part of our subject, we would observe that in hanging a silk dress in a wardrobe, care should be taken that it is placed clear of the doors. If it is so placed that the doors in opening and shutting, chafe the folds one against the other, that is equivalent to so much wear, and dresses are entirely spoiled in consequence of such treatment.

Velvet.—This variety of silk manufacture is remarkable for its exquisite richness and softness of surface; a peculiarity due to the arrangement of a number of threads, which are used in addition to those usually employed in weaving a plain silk fabric; and the process is so singular that we may here give a rough outline of it; as, once understood, it will be a very useful guide to the proper means of preserving the material.

Besides the threads required to form the plain silk which forms the back of the velvet, extra ones are woven in to form what is termed the "pile." The richness of velvet depends upon the closeness of these pile threads, which are first thrown across a small wire bearing a slight groove upon its upper surface. By a most delicate operation these wires are removed from the fabric into which they have been woven, by cutting the threads along the grooved wire with a sharp instrument called a "treval." This, of course, leaves the two ends of the thread standing above the level surface of the backing, and these, being properly dressed, form the pile. Striped velvets are produced by leaving some of these pile threads uncut. As the work proceeds, all irregularities are removed by means of a very sharp razor, which cuts off any projecting fibres.

It is somewhat difficult to lay down any definite rules by which the quality of velvet may be judged. One of the first requisites, however, is that the pile should be close — so close, in fact, as not to allow the texture of the backing to be seen through it. Another is, that the pile should be short; while the backing should be tested for softness in the same manner as we have described for ordinary plain silk. If the fabric be taken between the finger and thumb, and pressed down, the pile, in a good material, will not yield, or receive a permanent impression. If it does, we may be sure that it is unserviceable, as, when made up for use, it will receive the impression of anything with which it is brought into contact, and will speedily become shabby.

When in use, it is of the first importance to keep the velvet dry, as it is perhaps more easily spoiled by wetting than any other textile fabric. A peculiar kind of brush is made expressly for use upon velvet; and it is unwise to use any other upon a valuable material of so delicate a texture. When velvet is kept in stock — that is to say, not made into garments — the best plan is to roll it in order to avoid folds. When made up, however, this is of course impossible, and consequently great care must be taken in order to keep it as free from folds as may be convenient. If laid down in a drawer, it should be upon the top of other things, and nothing of any weight should be allowed to rest upon it. There is no doubt that velvet is better preserved when hung up than when folded, and this course should be adopted wherever practicable. The reason for these precautions will be seen after a moment's consideration. As we have before said, the pile, which is the great peculiarity of the fabric, consists of short threads which stand at an angle to the flat surface of the supporting material or backing. When the velvet is folded, these projecting threads are doubled under or folded, and an irregularity of surface is produced which is quite destructive of the singular beauty which is its chief characteristic, namely, perfect evenness and uniformity.

With ordinary care in treatment, good velvet is one of the most durable of textile fabrics; but any neglect or improper management will result in more damage than years of careful and fair wear and tear. With respect to the cost of velvet, very little can be said, except that a good material must of necessity be expensive. It is said that a skilled workman will sometimes weave as much as a yard in a day, but this is a rare circumstance if a good material be produced. As many as forty or fifty insertions of the wire are required in each inch of material woven; and as each of these wires has to be cut out to form the pile, it may easily be imagined that the process is tedious, and one which involves much labor and expenditure of time. Under these circumstances, it will at once be evident that a cheap velvet cannot be produced; especially as nearly twice as much silk is used to form the pile as is required for the warp thread in the backing. It is true that a so-called velvet is produced at a cheap rate, but this cannot of course be recommended either for beauty or durability; and we can only in this case repeat the advice given with respect to plain silk; namely, that unless a really fair price can be given for it, velvet had better be left unbought.

There are of course almost numberless fabrics of silk besides those which we have already mentioned; but to describe these would be of very little practical use, as the rules for their selection and treatment are almost identical with those we have already offered. It may be expected that we should here offer some remarks on the material known as cotton velvet or velveteen, but as our plan is to treat of textile fabrics with regard to the fibres of which they are composed, we shall reserve our observations upon these until we come to cotton manufactures.

Woolens.—Of the animal products, of course silk is first. Next to this, wool is the most important one; and it is of the various fabrics which are manufactured from this material that we next propose to treat. While, however, the first place in the long list of textile fabrics must undoubtedly be awarded to silk, even this must, in its turn, yield the palm to wool for warmth, durability, and the variety of purposes to which it may be applied. If the products of silk are numerous, those of wool are well nigh innumerable. Broadcloth, curtains, carpets, blankets, table-cloths, rugs, stockings, shawls, and numberless other things of daily service in the household, all owe their origin to this source, and consequently the consideration of this kind of textile manufacture is deserving of the utmost attention.

The manufacture of woolen fabrics is undoubtedly one of the most ancient of arts; and at an early period of English history it had attained considerable importance, and had been subjected to several more or less absurd legal restrictions. The peculiar property of wool which ensures its "felting," or forming a flat layer under pressure, even without weaving, doubtless attracted attention at a very remote period, and from this time until the present it has been applied to various purposes in the domestic circle. Wools are divided into two great classes, called respectively, clothing and combing wools. Of these, the first are mostly used for the manufacture of cloth; while the second is more generally applied to hosiery, merinos and a great number of fabrics which do not need these peculiar felting properties. Besides the rough division just made, the wool of various animals differs very much in quality; and although by far the larger proportion is obtained from the sheep another, and finer variety is obtained from the goat of Thibet, and it is of this that Cashmere shawls are manufactured. The finest of the European wools is that of the merino sheep, which is more than ten times finer than that of the ordinary British animal. The llama and Angora goat also produce wool of fine quality; but it must not be expected that the materials sold as llama cloth or merino are altogether manufactured of the wools whose name they bear. In fact, the ordinary sheep supplies by far the greater part of our woolen manufactures; and the terms we have just mentioned are very frequently given by imaginative drapers to fabrics which have no right or claim whatever to such titles.

One of the first fabrics of this material which claims our attention is broadcloth. It is made from the shorter kinds of wool, and when woven undergoes a peculiar process which is called fulling or milling; and consists of a beating under heavy blocks of wood, which causes the fibres to combine, or "felt," and adds very materially to the thickness, strength and stability of the cloth. In order to produce the peculiar nap or downy surface of cloth, another operation is however required, which, while it improves the appearance, also slightly diminishes the strength of the material. This process is called carding, and is accomplished by means of the hooked fruit-cone of the plant known as the teasel. In this manner, a portion of the wool is raised from the hitherto closely-laid surface; and drawn in a parallel direction along the cloth. The irregularities are then removed, and the nap laid even by means of very sharp blades of steel, which revolve over the surface of the cloth, leaving the main texture of course uninjured. In the manufacture of woollen cloth, some twenty or more processes have to be gone through, and, although when effected upon an extensive scale these are performed with comparatively little cost, it will be at once evident that a good cloth is worth a considerable amount per yard; and that those varieties which are sold at a cheap rate must of necessity be of an inferior quality.

In selecting a cloth, one of the first qualities to be ascertained is the closeness and fineness of its texture. In material of an inferior kind, the texture is open and coarse, a defect which can be detected in a moment by holding it up to a strong light; if the light passes through it, the cloth cannot be of first-rate quality, and will give way, and become full of holes after a little use. A really good cloth, on the other hand, is so closely woven and so compactly felted together as to be perfectly impervious to light; and this will of course wear better than the first-mentioned. The thickness of the material will influence this to some degree; but a thick cloth is not always a good one. We should prefer one of a moderate thickness, but which was opaque. Softness is an essential quality, and is as important in this fabric as in the case of silk, while it may be tested for in the same manner, namely, by gathering up the folds, and observing the angles which they assume. In the best cloths, especially those which are black, the color is some guide as to quality: those of the finest character being of best color. The smoothness and perfect equality of surface must also be observed, as the common varieties are not brought to the same high state of finish as those of closer and more compact texture, and this test is applicable to both sides of the fabric. In a really first-rate material there is often but little difference of finish between the face and the black surface. This is an important quality with respect to economy; as when the front surface is slightly worn or soiled, the garment may be turned, when it will be nearly as good as when first made up. When purchasing a cloth inquiry should always be made as to its having been well shrunk, as, if this has not been properly effected, a shower of rain will probably destroy its beauty, and spot it all over. A word of caution may here be added with respect to a base imitation of cloth known in the trade as "shoddy." This is frequently well got up, and finely finished; but it is utter rubbish, and thoroughly unserviceable. It is composed chiefly of fragments of old cloth felted on to a coarse woven texture, and may be detected in a moment by tearing the fabric in the direction of its length. Another good test is that of attempting to draw out the fibres at the end of the piece. A really good cloth will yield fibres of some length; but it is utterly impossible to draw these out of shoddy, on account of their shortness. Where a cloth of extreme cheapness is shown to the intending purchaser, this test should always be applied; as it is only reasonable to suppose that a fabric composed of such short fibres (which resemble dust in their raw state) cannot be so strong or firm when made up as that in which the longer ones are used; as these latter from their greater length are more firmly interlaced, and consequently offer greater resistance to any tearing strain.

With regard to the preservation of cloth, very little need be here said, as almost every housewife knows what is needful in this respect. Two hints, however, may be offered. In the first place, all dust and dirt should be carefully removed before the clothing is placed in store, or the impurity will speedily work its way into the texture of the cloth, and destroy its brightness and beauty. The second point is not, perhaps so carefully attended to, although it is equally important; namely, that of perfectly drying the cloth before putting it away. All dampness should be removed by drying before a fire, or mildew will most certainly ensue if the material be left for any length of time. When placed in a drawer, all the folds which can be removed should be pressed out; or the cloth will, when required for use, be full of awkward-looking creases, which it will be difficult to remove.

Cloth may be washed; but this is a somewhat dangerous process, and it is better to simply cleanse the surface by means of a tuft of the same or a similar material which has been dipped in a weak solution of liquor ammonia in water. It may also be re-dipped; but as this process requires some skill and practice, it had better be confided to the professional dyer. After undergoing either of these operations, the cloth must be pressed with a hot flat-iron; or as the tailors call it, "goosed," and this should not be effected upon the bare surface of the cloth, but a piece of linen or calico placed between it and the iron.

The very useful and almost indispensable woolen fabric known as flannel is so familiar to all as to need but little description here. Flannels are simply woven in the same manner as already described in these articles in the production of cloth, and although there are many varieties of the fabric, the process of manufacture is the same in nearly all cases. Although flannel should be, and is usually supposed to be, a woolen fabric, it is often very largely adulterated with cotton, and this in connection with the exceedingly loose weaving, is the reason why some varieties are to be purchased at so cheap a rate. It should be remembered, however, that an admixture of these materials is neither so warm nor so serviceable as a genuine flannel, which should always be secured even at an extra cost. Welsh flannel is generally considered the best, as combining at once the important qualities of thickness, softness and durability in an eminent degree. Many other varieties, however are not manufactured, which are very nearly, if not quite, as excellent in quality, and which will often be found suitable for various purposes, while they may be procured at a much less cost. In judging of the quality of flannel, there are two important points which should be considered. The first of these is the closeness with which the threads forming the texture are woven together. The difference in this is easily discerned if two pieces of good and bad quality are held before a strong light. It will be observed that in one case the texture is loose and open, while that of the better quality is almost impervious to light. It is evident that this variety contains a much larger quantity of material and that it is consequently very much warmer and more durable. The second point claiming attention is the softness of the material; and the least suspicion of hardness or harshness to the touch will indicate the presence of cotton, and consequently the sample may at once be pronounced of inferior quality. Money is often wasted in paying a higher price for flannel of a whitish color. Where this light color is the accompaniment of finer quality, it does not matter, but it should be remembered that most flannels become of similar tone and color after having been washed a few times; and therefore, except for particular purposes, when whiteness is really essential, extra expenditure on this account alone is merely waste. The same rules may be applied to the selection of the variously-figured flannels now in such general use for shirtings and other purposes, as we have given for the plain fabrics; but, as in these cases there are greater facilities for the mixture of cotton with the wool, particular attention should be given to the softness of the material.

Having obtained a good flannel, considerable care is required in its treatment while in use, if the utmost durability and comfortable wear are to be obtained. In washing this, and, in fact, all woolen fabrics, certain precautions must be taken, or the softest and best material will become hardened and deteriorated. When first wetted, a good lather should be made with fine soap and water, only just warm, and no soda or washing-powder should be added on any account whatever. The temperature of the washing water may afterwards be raised, but in no case should it be allowed to reach anything like boiling point; nor should any woolen fabric be boiled in the copper. In the case of colored flannels, still more care is requisite, and the lower the temperature of the water in which they can be thoroughly cleansed, the better and safer it will be.

Blankets are woven loosely in a similar manner to flannels, but in these, the peculiar, long, and somewhat more tufty nap is raised, after weaving, by means of a roller, upon the surface of which a number of brass pins are placed. These pins catch and draw out the fibres of wool until the surface texture peculiar to blankets is produced, and it is to this process that this important variety of textile fabric owes its properties of softness and warmth. As a general rule, only the larger sizes of blanket are made of the longest and finest wool, the smaller sizes being of an inferior quality. In the selection of blankets, the same rules may be applied as those just given for flannel. The length of the pile, and the closeness of the woven threads are both important matters, especially the woven texture, so as to partly conceal its openness and coarseness; but if the texture be examined, by holding it up to the light, its quality may be at once determined. Like flannel, blankets are often largely adulterated with cotton, and the defect may be detected in the same manner as before described. In fact, a blanket ought not to be harsh, or even stiff, in the slightest degree; and if it is, it should be at once rejected as likely to be of a very unserviceable quality. The length of the wool employed is also a good test of quality, and this may be easily ascertained by drawing out a few fibres from the surface. If these fibres draw out of a good length, and from the body of the fabric, the blanket is probably a good one; but if they are short, and break off at the surface of the woven part, it is an evidence of the use of wool of too short a quality to render good service. The weight of a blanket is also some guide to its quality, for the simple reason that a closely-wrought fabric is heavier than one more loose and open in texture; and it will be found that the extra closeness of the weaving is generally accompanied by additional thickness of the whole. A caution may here be added as to the very "cheap" blankets which are sometimes to be seen in shop windows. It is said that everything is made for a purpose, and these are made to sell, and not for wear or utility. Really good blankets are expensive; but one good one will not only last out several of inferior quality, but will be much more warm and comfortable in use, and so be infinitely cheaper in the end.

Like all woolen fabrics, blankets require some care in use; the same precautions which we have given for flannels in the process of washing are applicable to them. It is not advisable to wring them out after cleansing, except in a very moderate degree, but they should be suspended and allowed to drain. The reason for this is that, in the process of wringing, the loose pile would be compressed unequally, and would remain flat upon the woven threads, and produce hard patches and an uneven appearance. Blankets are particularly liable to the attacks of the moth, and it is usual to place small bags containing camphor between them, and in the drawers in which they are stored, in order to prevent mischief from this source. It is also of the first importance that they should be kept well aired and perfectly dry. In the summer time it is an excellent plan to hang them in the sun at least once a week for an hour or two at a time. If used with care, blankets are very durable. A really good pair ought to last nearly a lifetime; but they are often treated very improperly and therefore we have mentioned matters in this paper which are probably well known to many prudent housewives, although they are frequently neglected or perfectly ignored by servants and laundresses.

The woolen manufacture commonly known as worsted consists of the longer kind of wool, called combing-wool, which is twisted into a somewhat hard thread before weaving; and the manufacture of certain fabrics of this material is as important in many respects as that of the softer variety of woolen goods already described. It is unnecessary here to enter into details respecting the process of manufacture; suffice it to say, that some of the variegated cloths called tartans are made of this material, which is exceedingly durable. Tapestries, stockings, and under-clothing are also frequently made of worsted, and from Shetland and various other places shawls and plaids of the utmost beauty are commonly exported. Some of the thinner worsted fabrics are called shalloons, camlets, and merinos, and the nap or down which usually appears in woolen fabries is in these removed by passing the woven material over a heated plate of iron. In the case of worsted textures, the same rules apply as those previously given for the selection of the ordinary woolen fabrics, and this is also the case with respect to their treatment when in use.

Besides the fabrics already mentioned, carpets of various descriptions are manufactcred, either partially or entirely of wool or worsted. Carpets are now so generally in use, that a few words as to their qualities and properties are really necessary in order to complete this part of our subject. The two most common varieties of carpet, and those which are most frequently employed in the house, are known as Brussels and Kidderminster. Of these the Kidderminster carpets are the cheapest, and if properly used, they will last for years. These carpets are made chiefly of worsted, and one of their chief peculiarities is that they are somewhat alike on both sides of the fabric; sufficiently so in fact, as to allow of their being turned when one side is slightly worn or soiled. They are of a kind of double texture, and, although the form of the pattern is the same on both sides, the colors are exactly reversed. Thus, if the pattern were a black cross on a white ground on the right side of the carpet, it would be a white one on a black ground on the reverse. These carpets are mostly so arranged, as to pattern and color, that the back or wrong side of the material, is at least of a presentable appearance, and this gives them an advantage which is not possessed by any other fabric used for the same purpose. Although neither so durable nor elegant, either in beauty of color or design, as Brussels carpet, they are, if of good quality, sufficient for the covering of bedrooms, and other places where the utmost wear and beauty is not required. In purchasing a carpet of this description, the selection of a material of a close texture and considerable softness is important. Beyond these two points no advice need be given, except that, unless a fair price be paid the material will probably be largely adulterated with cotton and various other fibres which lend themselves readily to the purpose, and which require some skill in order that they may be detected.

Far more elegant, as well as durable, are the carpets known as Brussels. These fabrics are a compound of linen and worsted, the former being used for the backing, or framework, which supports the latter, which, of course, is on the front or right side of the carpet. It would be too tedious to explain here the process of manufacture, which is somewhat complicated; but we may observe that, independently of the cost of material, the labor involved in weaving complicated patterns is such as to preclude the possibility of its being produced at a very cheap rate. But, although a good Brussels carpet is expensive in the first instance, it is well nigh indestructible if properly used; the combination of worsted, and flax, or linen, offering as it does not only the resistance to wear of two very durable substances, but of the two combined in the best possible way for the purpose. The upper surface of the carpet consists of a series of loops of worsted, which are secured to the linen cloth underneath. These loops yield to the pressure of the foot, and bend backwards and forwards for years without much perceptible wearing away. Even when the first surface is worn off the carpet, the stout linen backing, with the fragments of the remaining worsted, form a good warm and comfortable covering for a floor, and a half worn out Brussels carpet is much to be preferred to the showy felts which are frequently met with.

In all respects, therefore, carpets of this sort are to be recommended when an elegant and rich effect is required at a moderate cost. In selecting a carpet, some care and judgment are required both as to color and quality. As a rule, the brighter colors are the least permanent, and it is generally considered that drabs and greys are the hardest and most durable tints. The texture of the fabric demands some consideration. The backing should not be too coarse, and the threads closely woven together. Upon the face the threads of worsted forming the pattern should be of moderate length and so closely placed as to prevent any part of the backing being visible. The surface of a good Brussels carpet is not very hard, and any great stiffness of the loops will indicate the presence of some fibre which is not what it should be — namely, wool. No particular precautions are needed in the use of Brussels carpets, except that as they are expensive, and often very delicate in color, care should be taken to keep them as clean as possible. It is an excellent plan, and one which should always be adopted when a good carpet is laid down — to entirely cover the floor with the wide, coarse brown paper commonly known as carpet paper, before the carpet itself is laid. It frequently happens that the joints between the flooring boards are somewhat open, and where this is the case, the carpet will often fade entirely along the line unless this precaution be adopted. It should also be ascertained that the floor is perfectly even, and that there are no projecting edges, for if there are, the carpet will wear unequally, and will speedily become shabby in these portions.

The particularly rich and beautiful carpet known as Wilton or velvet pile is also woolen fabric, and is similar to Brussels, except that, instead of the loops which form the upper surface being left, entire, they are cut in precisely the same manner as we have already described in the article on velvet. The ends of the wool are by these means left standing at right angles with the surface of the carpet and this imparts to these fabrics the velvety appearance which is their chief charm. Like Brussels carpets, these velvet piles are very durable, although not to so great an extent; and the rules we have given for the selection and use of the former are also equally applicable to the latter. The pile should be close and firm; and if this be the case, and a fair price be paid, there need be no difficulty in securing a really serviceable article.

In concluding this part of our subject, we may remark that one reason why carpets often wear out with exceeding rapidity is because, they are not cleansed either often or thoroughly enough. A moment's consideration will show that when a fabric like a carpet becomes charged with particles of rough, gritty matter, every footstep upon it grinds the fibres one against the other and against the dirt. By this action, not only the surface, but also the interior of the carpet is destroyed, and thus a kind of double wear is going on at the same time. Of course it is not to be understood that carpets require moving every day or week, but they should never be allowed to become thoroughly impregnated with dirt and dust, as they frequently are, through the neglect of domestic servants.

It will be remembered that at the commencement we roughly divided the fibres out of which textile fabrics are manufactured into two classes, namely, those derived from the animal and the vegetable kingdoms. Of the first of these we have already treated, and have now to consider those which are the products of the latter. It would be difficult to determine which of these two great classes is the most useful to men, as, while silk and woollen goods are extremely beautiful, and, in many cases very durable, the fabrics woven of flax, cotton and hemp, are perhaps, if anything, even capable of more extended application than these.

Of all vegetable fibres, flax is undoubtedly the most excellent; capable of being woven into textures of the most exquisite fineness, it is yet strong and exceedingly durable. It will not come into the scope of these papers to describe all the curious processes needful to prepare the flax for weaving purposes; we may, however, in passing, observe that the flax-plant grows to the height of three or four feet, and that the portion useful for the production of the fabrics is that near the bark of the principal stem of the plant. It is grown in most European countries, but that grown in Holland and Belgium is said to be the best. When fully ripe the plants are cut down and dried, when the flax fibres are easily taken from the stem. The stems are laid in water until the softer portions are rotten, when, after being dried, the fibres are extracted from the waste portions of the stalks by various processes known as "skutching" and "hackling." These operations being performed, the flax is ready for spinning into thread, preparatory to weaving.

With this very brief sketch of these preliminary processes, we may pass at once to the consideration of the various fabrics woven from these fibers. Linen manufactures are known in commerce by various names, which are regarded according to their fineness, patterns, and other particulars. Some of these are bleached, such for instance as damask and cambric, while others are left partially at least of the natural color of the flax. In all classes the strength and fineness of the material depend upon the quality of the yarn from which they are manufactured, and the closeness and evenness of the weaving process. There are almost numberless varieties of linen fabrics; from the coarsest canvas and bed-ticking, to the finest cambric—and some of the finer qualities are not only of exquisitely delicate texture, but are very expensive. Of the plain fabrics, those known as Irish and English linens, and holland, which latter is mostly brought from the Low Countries, are familiar and characteristic examples. These are so frequently in use in the household, and are so well understood, that we need only mention them. The plain linen is mostly used for bedding and wearing apparel, and the various kinds of holland are chiefly in demand for window blinds. The application of linen cannot, however, be recommended on the score of economy — as the constant exposure to sunlight, and air causes speedy destruction, and in the end Venetian or wooden blinds will be found to be far cheaper. In selecting a plain linen fabric, the principal guide to quality is in the fineness of the texture. This must not, however, be confounded with smoothness of surface, as, while a really good and excellent fabric may be left rough and unfinished, one may be made, by means of various processes, such as starching, smoothing, and calendering, to appear of very superior quality. The real test is the closeness of the weaving, and fineness of the threads — the absence of the dressing is a positive advantage. The cloth should be doubled and smartly rubbed together, when any dressing of starch or other material used to disguise the real quality, will be removed, and the true state of the fabric may then be readily determined.

Among the most familiar and useful of the linen manufactures, are the two fabrics known as linen damask and diaper. The first-named of these is chiefly used for table-cloths; it is usually twilled and figured, and is often of considerable beauty of design, and intricacy of pattern. This pattern is introduced in the weaving process, and is consequently as stable as the cloth itself. A really good damask is exceeding durable if properly treated; but of course, considerable care is needed both in actual use and in washing. Much of the beauty of a tablecloth, such as that we are describing, depends upon its perfect whiteness, and freedom from spots and stains, which quality cannot be expected to continue except with careful use. One accident to which white clothes of this description are liable, is the spilling of the juice of fruit upon them at table. This should be seen and attended to at once upon the removal of the cloth — if possible before the stain is dry. The entire cloth should be placed in cold water for some time, and well soaked previous to final washing in the usual manner. If allowed to dry, and then placed in hot water at once, the stain will probably become so fixed as to defy all the laundress's efforts to remove it.

Diaper, chiefly is used for towels, and in the nursery, is a similar fabric to damask, except that the figure or woven pattern is much smaller. It requires the same treatment, and with care is quite as serviceable. Both of these textures are quite expensive at the first outlay, but they are very lasting, and consequently it will be well at the outset to procure those of good quality, both for the sake of appearance and for really permanent service.

The finest fabric which can be produced from flax is that known as cambric, which is mostly used for the finer sorts of handkerchiefs and neck cloths. Cambric is a very soft, beautiful, and durable fabric, which may be selected in the same manner, and by the same rules as any ordinary plain linen texture. It should be of exceeding softness and fineness of weaving, and, of course, should only be applied to such purposes as suit its delicate construction.

Lawn is an intermediate texture between cambric and ordinary plain linen, and may be selected and treated precisely as the before-mentioned fabrics. Into this brief outline of the linen manufactures in household use, we have not thought it necessory to introduce any of the coarser or more uncommon fabrics. There are, as we have before remarked, almost numberless processes of manufacturing linen yarn into cloth; and, of course, to each product a particular designation is given, such as drill, huckaback, and many others. As, however, these are all simply linen, the observations already offered will be a sufficient guide both as to purchase and treatment.

Next in quality, and perhaps, of even more importance, general utility, and extensive application than linen, stands cotton. The number of purposes to which fabrics of this material are applied, are almost beyond computation even now, and are extending every day. As a branch of manufacture, that of which we are treating is, in England, well nigh as extensive as that of iron, and whole tracts of country are so nearly entirely occupied in the process that they take the name of cotton districts. Furnishing as it does, material of various degrees of fineness and strength, capable of being dyed into brilliant colors after weaving, suitable for spinning into sewing and various kinds of threads, and applicable to almost every purpose in the household, cotton cannot be considered as the foremost and most important of textile fabrics in household use. Thus, as a fabric of daily — we might almost write hourly — use, it is necessary in these papers to fully consider it, and to offer such suggestions as may lead to its proper treatment when in actual work, and this it is our purpose to do in our next paper on this subject.

As we have already remarked, cotton fabrics, although not nearly so durable or beautiful as those of flax or silk, are, from their almost universal use, and the numberless purposes to which they may be and are applied, of the utmost importance in the household. It is only in comparatively few houses that linen sheets and underclothing are generally adopted, on account of their expensive character; and in the humbler circles of society cotton not only has to take the place of linen, but of silk and velvet, being, in these cases, used as the outer dresses as well as for under garments. When these facts are taken into consideration it will at once be observed that, although placed by us a long way down in the list of textile fabrics, it is really from its great cheapness and adaptability to so many uses, much more important than many of the richer materials before noticed.

There are a great number of sources from which the cotton supply is derived; and as the quality of material varies in each, we may mention some of their peculiarities. That of the finest quality is mostly grown near to the sea, and is generally known as Sea Island cotton (the largest plantations are in South Carolina, Georgia and Florida), and it derives its name from its having first been extensively cultivated in the low sandy islands on the coast from Charleston to Savannah. The superiority of this kind of cotton is due to the fact of the threads or filaments being longer than is the case in other varieties, while with this is combined a peculiar even and silky texture, which, combined, fits it for the production of the finest yarns and fabrics. Upland cotton is of a rather coarse quality, but upon the whole American cottons may be safely considered as the finest Some varieties of cotton are produced and exported from India, China, and Egypt, but from America is derived the chief supply for manufacture in England and America.

It is very difficult to entirely remove the seeds of the cotton plant from the long, wool-like filaments which are required to be made up into cotton yarn; and it is one of the tests to which raw cotton is subject to ascertain how well, or imperfectly, this operation has been effected. Even the best samples scarcely ever arrive in market with this process effectually performed; and the quality of the sample is judged by its cleanness and freedom from seeds, as well as by the length of its staple and the delicacy of its fibre. After cleaning, the wool is brought to what is called the lapping machine, which is used for the purpose of regulating the weight and richness of the yarn, and of course, consequently, the fabric which is ultimately wrought out of it. The next operation is that of laying the fibres parallel, a process which is of course essential when the material has to be spun. This process is called "carding," and when the wool leaves the machine, it is in the shape of a very thick ribbon, with all the fibres laying parallel, when it is ready for spinning into yarn or threads—after having been somewhat extended in length, and drawn into a closer texture by means of the "drawing machine." The roving of cotton fibres simply consists of laying this ribbon out to the required thickness, and imparting to the fibres so much of a twist as will enable it to hold together, and may, in fact, be termed the beginning of the spinning process.

The cotton cloth known as calico is certainly one of the most common of all textile fabrics; and, considering the important and prominent part which it occupies in the household, it may be safely said to be one of the most useful. As we have before remarked, there are but comparatively few households in which linen is in common use for under-clothing, sheets, etc., and in these humble establishments calico is the unvarying substitute; and it answers the purpose excellently, being warm, and, if of good quality, durable and serviceable. Calico is manufactured of various widths and qualities, according to the purposes to which it is to be applied. For instance, besides the differences of texture as to thickness, and closeness of weaving, it may be either bleached or unbleached, while as to width, it may be obtained in breadth varying from three-quarters of a yard to two and a half yards. The wider varieties are usually of rather better quality than those which are narrower, but those of extreme width are generally only applied to the manufacture of bedding. In price, calico varies from eight to fifty cents per yard; and in some cases a very fine sample will be worth even more than that. From the foregoing remarks it will be seen that this variety of cotton-cloth may be procured of a sort applicable to almost every purpose for which a textile fabric is suited, and hence arises the enormous demand, which is year by year increasing.

There are two great classes into which cotton-cloth may be roughly divided; namely, those respectively called bleached and unbleached. The first of these has the natural color discharged by chemical means, in which process chlorine, in one or other of its forms or compounds, is an important agent. In the second, the color is that of the raw cotton, and is generally of a very light brown, Although the process of bleaching has been so perfected as that it may be effected without much loss of strength to the fabric, it is still the general opinion that the unbleached is the most durable. One thing is certain, namely, that it is much cheaper; and, as a very few washings will remove a great deal of the color, it may be recommended on that account. Besides this, housekeepers assert that a calico which has thus been, as it were, naturally bleached, will keep its color much better than one in which the process was effected by artificial means. Another advantage exists in the fact that much of the whiteness being produced by means of various dressings used and applied to the surface of the cloth, and altogether independent of, and useless to it, the real quality may be more readily and surely determined when purchased. In fact, many of the cheaper varieties of calico are now so dressed up and adulterated, that it is a difficult matter to find out what their quality really is, unless the purchaser knows well how to detect the trickery by which it is concealed.

The distinguishing qualities of a good cotton fabric are chiefly these:—First, a very close texture; that is to say, the threads must be closely woven together. The best method of determining this is by holding it up to the light, when its good or bad quality will be at once apparent. In a thoroughly good cloth it will be observed that, besides the closeness of weaving, the material will be very evenly woven, and that the same degree of fineness is kept throughout the piece. Another test of quality is that of the condition of the surfaces; which should be smooth, even, and free from knots or lumps. Some calico is exceedingly thin; this is of course a defect; and as it is one which generally accompanies a very open and loosely-woven fabric, it may at once be rejected as likely to be of the most unserviceable description. The various degrees of softness must of course be considered in reference to the question of thickness, as while a soft fabric is in most cases the best, that quality must not be obtained at the expense of loss of thickness and closeness of weaving. Of color we have already spoken, and would merely observe that it is not wise or economical to pay a very high price on this account alone. Some of the better varieties of calico are altogether lighter in tint than those of inferior manufacture; but care must be exercised in ascertaining that this is the result of the use of superior cotton, and is not due to a dressing of some light material placed upon the surface of the cloth.

Hitherto we have been speaking of unbleached calico, which is, as a rule, more free from the various adulterations which are used to produce a white and smooth surface than that which is known as bleached; and hence in purchasing the latter, greater care is necessary than in the former case. It is in bleached calico that the manufacturers allow their adulterating propensities to have full swing; and it could hardly be called exaggeration if we were to say that some of the so-called bleached calicoes are at least half made up of dressing of various kinds. Now this dressing is not of the smallest practical utility, as it adds nothing whatever to the fabric to which it is applied which is of the least service in use. It is, in fact, merely a coating of material which serves to disguise the real character of the cloth, and it is used simply to improve the appearance of the texture until it is sold. It may therefore be said to be used merely for purposes of deception, to make the unwary purchaser believe that she has a much better quality of material than is really the case. Under these circumstances, then, too much care cannot be given to testing all cotton fabrics which have this dressing upon their surfaces. Very fortunately the adulteration is easily detected. If the cloth be taken in both hands, and its surfaces rubbed smartly together, the dressing will be speedily and easily removed. When this is effected, the real quality of the material may be easily ascertained by examining the closeness of the texture as before directed, and if the cleared portion of the fabric be now compared with that which retains the dressing, it will be readily seen how much of its whiteness, smoothness and beauty it owes to adulteration. As a general rule, the commoner varieties are most liable to this facing — by means of which, with the aid of careful rolling and calendering, they are made to closely resemble material of a much finer quality. In all other respects bleached calico may be tested as before described in the case of that which is unbleached; that is to say, for softness, closeness, and the thickness and smoothness of its texture.

The finest description of calico is known as long-cloth, which is used for shirting and various articles of clothing. This is not made nearly so wide as those qualities used for sheetings, being seldom over a yard. A good sample of long-cloth will be found very durable, and in this as in all other cases where textile fabrics are concerned, it will be found to be far more economical to purchase that of the best quality. Perhaps more money is wasted in the purchase of bad calico than in any other textile fabric. It is of course obtained for real service and hard work. Unlike a great many of the fancy textures, it cannot be used for decorative purposes; and consequently, durability is one of the primary good qualities it should possess. If this is not obtained, obviously it is of no service whatever, and the money expended in its purchase is entirely thrown away.

Besides the extensive applications of the plain cotton fabrics which have already been noticed by us, the same material is now produced, bearing upon its surface a printed pattern, which renders it suitable for morning dresses, and various articles of clothing for children. It need scarcely be said that this branch of cotton manufacture is one of the utmost extent and importance; as all know that in many families in humble life, silk and other fabrics are unknown, and that consequently the Sunday dress is like that of the week day, except that it is cleaner, and perhaps of a rather more gay pattern. Very pretty and serviceable dresses indeed may be made of cotton prints if selected with taste and care, and they will be found far better than some of the trashy imitations of silken and woolen fabrics which are now mannfactured apparently for the simple purpose of deceiving the unwary

Some manufacturers are not over-scrupulous as to the means which they employ in order to produce brilliant effects of color. Bright tint s the public will have, and in order to meet the demand, this brightness and brilliance is often produced by means of chemical processes, which materially injure the texture of the cloth. As a vegetable substance, cotton requires careful treatment with chemicals, especially acids, or it will, if not altogether destroyed, be so weakened as to be liable to tear and break under the slightest strain. This is frequently observable in some prints. Take, for instance, a print dress, the pattern of which consists of a small red cross upon a very dark ground. In this case the red portions of the fabric are rendered so weak by the chemicals employed that they are speedily worn through; and, after some slight wear they can all be easily removed completely up to the edges of the design by merely rubbing the clothes smartly together, while the darker portions of the cloth remain uninjured.

It is, however, clearly impossible to offer any hints upon the selection of colors in calico prints, as almost every day fresh improvements are made by which more brilliant effects of color are produced, and this without injury to the fabric. One thing, however is certain — namely, that the more of the texture that is left uncolored, or only slightly tinted, the greater will be the probability of its serviceability.

Besides these remarks on the selection of colors, very little need be offered upon the purchase of cotton prints. As in the case of plain textures, the closeness of weaving, thickness, and freedom from dressing should be tested; and if only ordinary discretion be used, and a fair price paid for the article purchased, there will be no difficulty in securing a material which will render a good return for the money expended upon it. In many cases, however, printed cotton fabrics fade and lose their color through injudicious treatment. Like those of wool, these fabrics also require some little care in washing, which, if given, will not only insure greater durability, but a far better appearance as long as the material lasts. For instance, a cotton print will become faded and spoiled in the first washing if soda or washing-powder be used, and the colors will often start if the prints be left wet for too long a period after having been washed. The best plan to adopt is that of making up a good lather of pure yellow soap, taking care to avoid that of the commonest quality, which often contains potash and other powerful alkalies. Into this the print should be placed and thoroughly cleansed in the usual manner, but not boiled. When perfectly cleansed, the fabric may be rinsed to remove any remaining soap, and, finally, drawn through a bath of clean cold water in which has been dissolved a little common salt or alum. This will fix the colors, and after this treatment the print may be wrung out and dried in the usual manner, except that this latter process should be effected as quickly as possible. It may be as well to state that cotton fabrics of all descriptions are almost instantly destroyed by any of the more powerful acids, such, for instance, as nitric or sulphuric. If much of either of these be spilled upon them, it will be difficult to save them; but if the damage be not very extensive, they should be at once placed in, or the parts affected be brushed over with a strong solution of carbonate of soda, which in turn should be washed out of the fabric as quickly as possible.

MISCELLANEOUS.

SEWING MACHINES.

A good sewing machine should be found in every home. It occupies a place in household economy scarcely second to any article of prime necessity; and there are but few families who do not recognize this fact. Indeed the time and labor saved by the use of a good machine, in doing the sewing for a family of ordinary size, is so well understood that it is scarcely necessary to refer to it.

In buying a machine, give it a critical examination, and see that it has points of merit which are now required in first-class machines. Notice the quality and variety of work it performs; examine its mechanism, keeping in mind that it should be simple and durable, for the less complicated the mechanical construction — quality and variety of work being secured — the better it is; be sure that it runs easily for a heavy-running machine is to be discarded upon sanitary considerations; it should make but little noise. Lastly the question of cost, other things being equal, is an important matter with many. Without disparaging the merits claimed for any machine, it is proper to say here, that the prices asked for nearly all of these machines are out of all proportion to their cost; and it is a fact that in Europe, these same machines may be bought for little more than half the prices demanded for them in this country. It is but fair to state, in this connection, that since the expiration of several of the most important and costly patents—and the large increase of manufacturers, that there has been a great fall in the price of sewing machines, and they are now sold for about one half the price charged for them two years ago.

Of the various kinds and styles of machines made, one may be selected suited to all tastes and pecuniary circumstances, and the terms of sale are such that it is not difficult for those who have not the money to pay down, to buy a machine on time, paying therefor in monthly installments.

It should be remembered that the best machine may soon be spoiled through carlessness or ignorance. It should be kept in order and treated as though it was made to serve its useful purpose always. The best machine will get out of order by careless and reckless usage.

CONDENSED TOILET CASE AND WRITING DESK.

In that portion of The Home Guide, referring to "Furnishing a Home," various kinds of furniture were mentioned, suited to the tastes and means of families in various circumstances, the object being to point out to all, whatever their condition in life, that which is serviceable, substantial and tasteful, within a wide range of prices. The numerous articles of expensive and elaborate furniture which are found in the homes of wealth, were not specially mentioned, for to specify such articles in detail is not necessary. But there are some pieces of elegant furniture which are very desirable when they can be afforded, combining as they do the useful and the beautiful. A late production in the way of an elegant condensed toilet and writing desk has been brought out in Chicago, which is not only new and novel in design, and highly ornamental as an article of furniture, but is of great excellence in point of utility. Two views of this desk are given, one closed, the other open, which afford of themselves, a description of it. When closed the front of the desk is a fine mirror; the mirror hangs on a pivot and when the desk is opened the mirror swings underneath, its reverse side forming the table. In thus opening the desk, the same movement opens book-racks at the side. The interior of the desk, may be arranged to suit the taste or the design of the purchaser. One side is sometimes used as a medicine case, a receptacle for various choice and valuable articles, toilet articles, etc. The chair in the engraving showing the desk open, is in the position that it should occupy.

The top of this unique desk is varied in design. In some cases it is finished with a mirror, wholly, or in part, and the balance of the space devoted to some useful purpose. The desk is elaborately finished, and is a triumph of excellence both as to beauty and utility. So well adapted is it for ornament and use in the house, that this special mention is made of it for those readers of The Home Guide, who desire something new, ornamental and useful of this kind. This elegant desk can be purchased direct from the manufacturers, or from your nearest dealer in fine furniture, and at a very reasonable price.

MUSIC AT HOME.

A taste for music should be encouraged in every home. No one can fail to see that this is beneficial; its influence is refining; it is a healthful recreation; it affords pleasure to every member of the family. Many hours which would otherwise drag heavily may be enlivened by music, either vocal or instrumental, or both. To sing well and to perform well upon some musical instrument, is a satisfaction to the person who attains to excellence in either case, not only because it is a polite accomplishment, but because of the pleasure thus afforded to others. Every member of the family should learn to sing by note. This is not difficult and in very many families there are enough members to take the various parts—soprano, contralto, tenor, and bass—and render almost any piece creditably.

There is more attention paid to this subject generally than formerly, and perhaps one reason for it is that singing very properly forms a part of the daily exercise of so many public and private schools throughout the country.

In proportion as musical knowledge extends, vocal and instrumental performances form a conspicuous part of social entertainment, both private and public. Musical amateurs are not limited to one class of society; there are many persons in all ranks of life, who are very good vocalists, and others who perform creditably on some instrument Thus musical entertainments, at once creditable and enjoyable may be gotten up in every village and neighborhood.

At evening parties music generally forms an attractive portion of the entertainment. It is frequently the case, that music is made the principal feature of such parties, and they are called " music parties." In this case a programme should be determined upon in advance In fashionable circles the usual method is to place all matters connected with the engagement of *artistes* and the making of a programme in the hands of a member of the musical profession. But generally this is not necessary or desirable. It is not difficult to arrange a programme in which amateurs only furnish the musical entertainment It is better in this instance to make the necessary arrangements beforehand of the pieces that each one will be expected to perform or take part in. But this applies only to music parties, and not to entertainments or parties where music is only an incidental feature.

Where the means of persons admit of it, a good musical instrument in the house, is desirable. It aids the development of the musical tastes of the entire household, young and old. It is often a pleasure to call the family around a piano, or organ, or other instruments upon which their voices may be accompanied, and thus sing together favorite pieces, or learn new ones.

The kindly office of music in lightening the cares, the vexations, and the trials of life are happily set forth in the following manner by an anonymous writer: "To women, music comes, under a great many circumstances with a power of relief and a gentle grace of ministration littte short of supernatural. Oftentimes she who sings to herself her favorite songs of Schubert, Mendessohn or Schumann, sings more than the song; it is her own plaint floating away on the wings of melody. Or a poor, lonely sufferer, hardly more than a child, who sits dreaming at the piano, while her fingers, caressing the deliciously cool ivory keys, glide through a wierd nocturno of Chopin, is playing no mere study or set piece! What a heavy burden seems lifted up, and borne away in the dusk! * * * Blessed recreation that brings back freshness to tired life, and buoyancy to the heavy heart!"

Music, good books, innocent games, and recreations at home, exert a powerful influence for good upon the younger members of the family. These appliances educate and elevate their minds in a proper direction, keep them from associations and places away from home that are demoralizing and baneful, and calculated to beget vulgarity and vice

To become expert either in vocal or instrumental music requires study, practice, time and patience; but perseverance will overcome every obstacle. It is not expected that every person will become a professional vocalist or musician, but all can learn to sing, and this all should do; and where it is possible, the girls of the family should learn to perform well upon the piano, organ, melodian, harp or guitar

SICKNESS AND ACCIDENTS—DOMESTIC REMEDIES.

At the outset, let us impress upon the mind of every reader the importance of calling in the aid of a skillful physician when it can be done, in all cases of sickness or accident where there is possible danger, and especially where there is a question about the nature of the ailment. It is always best to send for a physician in cases of sudden illness, for it is difficult sometimes for those who are not versed in the knowledge of diseases and remedies to understand simple medical facts. Even skillful physicians of extensive experience are sometimes puzzled to account for numerous cases met with in their practice; hence the wisest and safest course to pursue in sickness generally, is to invoke professional medical assistance.

There is a strong prejudice among physicians against systems of domestic medicine, but nothing is more true that resort must sometimes be had in almost every family, to domestic remedies in sickness or accident. Some ailments are known as soon as their symptoms are discovered, and are so trivial that a knowledge of well-established remedies, with a little common sense will soon restore the patient to usual health. Such cases are not serious enough to require the doctor's skill. Again some persons live so far from a physician that his immediate assistance cannot always be had; and there are cases too, where a few moments sometimes decide a patient's fate. There must be, we repeat, some system of domestic medicine, and it follows that instruction in the adoption or employment of remedies is of very great importance. Such information is highly necessary from every point of view. It may save hours of pain to patients and anxiety to their friends. The chief danger, however, consists in placing too much reliance upon domestic remedies where the nature of the disease is misunderstood; and serious and fatal mistakes are sometimes made. Human life is man's highest earthly boon. To trifle with it is criminal, and empysicism in medicine either domestic or professional, cannot be too strongly condemned.

We live in an age when there is a thirst for useful knowledge on the part of the masses. "To know everything that can be known," says the author of a medical work, "is the ruling spirit of the age, and the science of art or medicine is a species of knowledge pre-eminently interesting and useful. The profound ignorance of the human system, and of the healing art that have heretofore prevailed, are unfavorable to the advancement of medical science and to the public welfare. To be possessed of correct knowledge upon a certain subject ourselves is the only sure means of judging of the qualifications of others; and it is hoped and believed that the general dissemination of physilogical and medical science will have the effect to put the public upon their guard against the hazardous experiments of the ignorant pretender and the designing imposter, for the uninformed and consequently unsuspecting are their almost certain prey."

But let the use of domestic remedies be restricted to simple cases; and those only can be considered simple whose symptoms are so well understood as to preclude any mistake as to their character.

The object of this portion of THE HOME GUIDE is to give information which the experience and observation of eminent medical authority have demonstrated is correct and valuable as to the nature of various ailments from which humanity suffers, the symptoms by which they may be known, the course they run, and the remedies which have proved beneficial. Under the general term, *medicine* is also included domestic surgery, which, while not embracing the mischievous object of trying to make every man his own surgeon, yet furnishes simple rules for dealing with slight accidents that occur in every-day life and are commonly treated without the aid of a professional surgeon.

An English physician, Dr. George E. Hope, in the little work, called "Till the Doctor Comes," has the following about the sick room:

"*The Sick Room.*—If you are so fortunate as to have a choice of rooms, do not put your patient into one which is dark and gloomy, but let it be light and cheerful, and with a fireplace if possible.

"If the illness be fever, something wrong with the eyes or brain, or other sickness requiring quiet, a back room away from the family will answer best; the patient will not care to look at anything or to speak much, and quiet is necessary. But if he be suffering from an accident, let him be near the rest of the family where you can speak to him. This will help to keep him contented and cheerful, for it will be an amusement to him to watch your movements while you are going on with your work, and it will save time in waiting upon him.

"Avoid a room which is exposed to disagreeable effluvia from any source.

"Never have the window so fastened that you cannot open it, especially from the top. Be careful not to have much furniture in the room, particularly if the disease be infectious. Bear in mind that woolen articles hold smells much longer than cotton or linen, therefore do not have woolen curtains. It is better to have no curtains at all, but if you think the room looks bare and cheerless use light muslin, or something which will easily wash.

"Have no woolen-covered sofa or chairs; cane-bottomed or plain wood are preferable, and a clean boarded floor, kept sweet by scrubbing and elbow-grease, is infinitely better without any carpet, excepting, perhaps, a narrow strip for you to walk upon just to prevent noise. In case of accident, the bed may be placed where the patient feels most comfortable, only it should be where there is a good light to see and dress the wound; but in fever and small-pox let it be between the door and the fireplace. The reason for this is that as the fire cannot burn without air there must be a draught to feed it, and as this becomes heated and rushes up the chimney, it is replaced by a fresh supply drawn in through the door and window. In this way the chimney acts as a ventilating shaft, carrying away the impurities of the room, and so helps to prevent the disease spreading. It is clear, therefore, that if a person stands between the bed and the fireplace, he must get the air after it has been contaminated by passing over the patient; whereas, on the other side — that is, between the bed and the door — he breathes the air pure. If from the form of the room the bed cannot be placed in this position, let there always be sufficient space left between the window and the bed to stand in.

"If the room has not been used for some time, do not put the patient into it until you have lit the fire and seen if the chimney draws well. If it be damp and cold, most likely it will not, and it is too late to discover this after the sufferer has been put to bed. I remember an instance where an old gentleman was taken suddenly ill with a chest complaint; he was carefully placed in bed, a blister put on the chest, and medicine given to promote perspiration. This was just at the commencement of winter and a fire was required, but on endeavoring to kindle it, every particle of smoke seemed to pour into the room. In a few minutes it was filled; my poor patient, with the difficulty of breathing from the disease and the smoke combined, was in a miserable plight. Doors and windows had to be thrown wide open, and then, to complete the confusion, a poor, terrified swallow, which had built its nest in one of the flues, forced its way down the chimney, its feathers of course covered with soot. The poor bird, so rudely disturbed out of its sleet, dashed wildly about the room, leaving plenty of black marks against walls, if not also against our characters for our want of forethought. A smoky chimney may often be cured by holding a lighted newspaper a little way up the flue. This warms the air and causes it to ascend.

"As to the bed itself. The best is no doubt a hair mattress, but as this is so expensive, I shall merely say if you have one, use it, but unless you are obliged, do not use one made of feathers. It is too soft, and the patient sinks into holes, so that in case of wounds or burns you cannot get to them properly. Besides, if the feathers get wet you cannot put them right again. Good clean straw or chaff, well and evenly packed in, is far better. It costs much less to begin with, it is more comfortable, and very much superior in point of health, and has this great advantage, that in case of being spoiled it can be emptied, the cover washed and refilled without loss of time and at a very trifling expense.

"It is a disadvantage to have the bed too wide. If the patient be lying in the middle and needs help, the nurse is obliged to lift either kneeling on the bed or at arm's length, a position which takes away all her strength and causes a very painful strain on the muscles. If you are obliged to use a wide bed, a good plan is to make a division down the middle with a board a few inches high covered with the under bedclothes. This not only prevents the invalid slipping away from you but answers the purpose in some degree of two beds.

"When you want to change the bedclothes, and the patient cannot get up, proceed in this way: roll up the clothes to be changed tightly to the middle, lengthwise, not across the bed; put on the clean things with half the width rolled up close to the other roll, lift the patient on to the newly made part, slip off the clothes he has just been lifted from, unroll the clean ones, and it is finished without any difficulty.

"If you have time before you put the patient to bed, scour the floor right well, and wash it with hot water, with a few cents' worth of chloride of lime mixed with it, or if you cannot get this, use a good-sized piece of quicklime, and rub well up into the cracks and corners. Do not be anxious to remove the whole of the lime. If you leave a little sticking in the crevices and pores of the wood it will prevent insects, give a clean, sweet smell to the place, and help to keep away infection. Now dry it thoroughly, and the room is ready for the invalid."

NURSING THE SICK.

Good nursing is always desirable in case of sickness, and oftentimes indispensable to the recovery of the invalid. No matter how skillful a physician may be, all his skill sometimes may avail nothing if his patient does not have good nursing. Indeed, hundreds of lives are saved every year by good nursing which would otherwise have been lost. The value of a good nurse is not generally appreciated. It has been said, and with truth, that nursing is a natural gift either in man or in woman; just as music, painting, and other things are. The best efforts of the doctor are often rendered nugatory by a want of knowledge, stupidity or obstinacy which are sometimes met with in the person of a nurse; and there are a great many well-meaning but thoughtless people who apparently try to do well as nurses, but who will never succeed, because they *are not cut out for it.*

Upon the subject of caring for the sick, the "American Family Physician" says:

Nursing.—The term nurse, in its general sense, imports something of the same kind of office towards the sick which the mother discharges towards her infant child. A nurse should always be a person of good sense, of sufficient health and strength to fulfil properly the duties of the employment, and faithful to the trust reposed in her or him. Kindness, gentleness of manner, an indulgent disposition, and studious attention to the calls of the sick, together with habits of neatness, may be said to complete the character of a good nurse. Some women, as well as men, have much more discernment, either natural or acquired, in adapting the means to the end, in the cure of diseases, than others. Some improve vastly by observation, while others remain nearly stationary.

The nurse may be said to work the machine, while the physician only superintends it. The nurse, therefore, has the opportunity of knowing things which must, to a greater or less extent, escape the attention of the physician, and if this opportunity is rightly improved it must always multiply greatly the chance of cure.

If there is anything holy and sacred in life, it is the offices of the well toward the sick. To be unmindful of the agonies of the diseased, to be heedless of their wants, and to be regardless of their cries for assistance, is like looking upon a drowning man without making an effort to save him.

Sickness, whether in the hovel or the palace, is the same, and requires that what we do should be done quickly, as the opportunity of affording relief is of short duration. In the journey through life, which is short at best, fellow-travellers should never allow themselves to reach the end of it without embracing many opportunities of making each other comfortable in times of sickness, for this is the lot of man, alike in infancy and old age.

There is one important principle in the practice of medicine, as well settled by observation and experiment as anything in the philosophy of Newton, which should be as well understood at the present day, by nurses and people in general, as by physicians. It is the effect of heat and cold, and other stimulants and anti-stimulants, upon inflammatory diseases. Heat quickens the circulation of the blood, and cold retards it. In inflammatory diseases, the blood already circulates too fast, and its force is one, if not the sole cause of the continuance of the disease. In sore throat, in croup, in pleurisy, in peripneumony, in inflamed eyes, in brain fever, in small pox, in colds, and in every other inflammation, whether local or general, the application of heat only adds more intensity to the flame which is consuming the body. This observation not only refers to the application of simple heat, but to all those articles of medicine, food and drink, which generate heat or produce warmth, such as hot-drops, spirits, camphor, heating teas, peppermint, tansy, ginger, pepper, mustard, animal food, and rubefacients.

The application of cold to the body, by breathing cold air and the immersion in cold water, or exposing the surface in any way, moderates the circulation of the blood and produces an anti-inflammatory effect. An inflammation may be subdued by the abstraction of heat alone, or which is the same thing, the application of cold.

Antimony, ipecac, sal nitre, salts, and lobelia in small doses, and cathartics in general, blood-letting, and all medicines which nauseate without vomiting, retard and lessen the rapidity of the pulse and circulation and subdue inflammation. Hot rooms and a hot atmosphere or climate increase inflammation. In inflammations of the throat and lungs, however,—such as sore throats, lung fever, croup, pleurisy, peripneumony, consumption, asthma, &c., a moderately warm, dry air is the most favorable to a cure, as the contact of very cold air to the raw surface of the mucous membrane of the throat and lungs is found to increase the inflammation.

Hot rooms are unfavorable to the recovery of women in childbed. The air of the room, in such cases, should not be higher than sixty-six or sixty-seven by the thermometer. A higher degree of heat operates, in general, to quicken the pulse and increase the circulation, or produce the inflammatory state. To some diseases, a summer-heat, or a heat of seventy-five by the thermometer, is congenial, but to acute inflammatory diseases it is unfavorable.

If the art of nursing is well understood, much may be done in fevers and inflammatory diseases by a discriminating adjustment of the heat of the sick room, and by the application of warm or cold water, as the case may require.

Too much dosing is exceedingly pernicious; the nurse must always look out for this error. In most diseases, the appetite is suspended, and the system is incapable of nourishment; the vital strength, therefore, is quickly spent from this cause alone, so that much less medicine can be borne with impunity. This observation is especially applicable to the diseases of children.

Cleanliness is a cardinal principle in nursing. Clean clothes, clean beds, clean vessels, and utensils, and a clean, well-aired room, devoid of offensive smells, contribute not only to the comfort of the sick, but to the prevention and cure of diseases.

The sick are, in general, feeble in mind, incapable of much conversation themselves, and seriously fatigued and injured by the conversation around them. A talkative nurse can hardly be said to be a good one. Even physicians sometimes err in this respect. Patients are not unfrequently fairly exhausted by the imprudent volubility of the medical attendant.

A dry air, as well as dry clothing must always be obtained in cases of sickness, if possible; but a close confined air is to be avoided.

Cool air is favorable to sleep and hot air produces wakefulness.

It is generally thought to be a very important affair that the patient should be pleased with the nurse and with the physician. This is well enough, but we apprehend it has little to do with the right operation of the sick. We should scarcely think of selecting a mechanic or an artist upon any such principle. It is skill that the patient should value, and not the looks and manners of the person who possesses it. For what can the manners or appearance of a nurse or physician have to do with the operation of a dose of salts, the abstraction of the blood or the agents employed to raise a sweat, or strengthen the tone of the stomach. In a disease of the nerves where the mind is to be wrought upon, it may be an object to please the fancy in the selection of a nurse or medical attendant who has the art of pleasing; otherwise it is not an object of much importance. If a person wishes to be cured he must rely upon the right selection and application of remedies.

A nurse should have a thorough acquaintance with the nature and operation of herbs and common plants. Many diseases may be ameliorated and cured by the use of simple means. Often where strong remedies have failed milder means have succeeded.

Lastly, the nurse should, in general, follow the direction of the physician, unless there is some special reason for the contrary. The physician is always the best judge of his own way and means of curing a disease.

Says Dr. George H. Hope, in his little work, heretofore mentioned, "There are five qualifications which we require in a nurse — Sobriety, Cleanliness, Firmness, Gentleness and Patience." And he proceeds to speak of them in this wise:

"*Sobriety.*—All I have to say on this point is, if unfortunately you cannot resist temptation do not come near us, the sick room is no place for you; we dare not trust you.

"*Cleanliness.*—Be always very clean yourself and keep the room sweet. A very little thing will spoil the appetite of a person already sick. Never let anything offensive, any dressings from a wound or a burn remain in the room. Let every vessel be emptied as soon as it is done with, well washed out, and left in the open air. Change the air frequently by opening the windows; remember bad air will poison a person as surely as bad food. The poison of fever is dangerous or not according as you weaken it with fresh air — just as you make spirit weaker by adding water. Do not leave food in the room if the patient cannot eat it. Do not let the drinking water stand long without being changed, as it absorbs whatever gases there are in the room; so that when the patient drinks it you are actually putting back into the stomach the poison which had been thrown out by the skin. Why do people put buckets of water into a place newly painted? Because they know that the water takes up the smell of turpentine and oil as it escapes from the walls.

"*Firmness.* — Remember, firmness is not rudeness. You cannot expect a suffering patient to know as well what is best for him as those whose brain is clear. Therefore if a certain thing is best to be done, do it; do it kindly, but do it, he will thank you for it afterwards.

"*Gentleness.*—Whatever you have to do for the patient, be gentle. In case of rheumatism or broken limbs you must change the clothes, however painful the process, but do it gently and cause no needless suffering. With care, all jerks and knocks may be avoided.

"*Patience.*—Never forget the difference between yourself and the person under your care. Did you never feel yourself irritable and restless even when you were well? Have there not been some days when you had been so easily put out, so cross, that you have almost been ashamed of yourself? How then must it be with the person taken from an active life and compelled to lie still in one position, or with one whose whole body is racked with pain! Never lose patience nowever sorely tried; bear with these trials for awhile, and by and by you will have your reward."

Good nurses are careful to avoid noise, confusion and anything which will disturb or annoy the patient. They go about their duties quietly, thoughtfully, discreetly. The careless, noisy nurse, the fussy nurse, the cruel and the dishonest nurse, these are to be discarded from the sick room. Numbers of valuable lives are being constantly thrown away by these different classes of nurses, while on the other hand every sensible physician of any experience will acknowledge that to the sacred offices of good nurses he owes much of his success in the practice of his noble profession.

THE MEDICINE CHEST.

A place for everything and everything in its place, is an aphorism, the value of which is acknowledged in every well-regulated family. In cases of sudden illness or accident, the necessity of adhering to this old maxim is often illustrated. However much some physicians and others may inveigh against the "Medicine Chest," our advice is for every family to have one, for oftentimes a simple remedy applied at once will prevent a protracted attack of sickness or confinement to the house, and sometimes save life. There are some remedial agents which should always be kept on hand, in a particular place where they can be had at a moment's notice. Get a medicine chest if you do not possess one already. A small box will answer, but it should be kept locked and out of the way of children. Use it for nothing else but domestic remedies and things likely to be needed in accidents or sudden illness.

The next thing to consider is what shall be put into it. THE HOME GUIDE does not advocate nor condemn any particular system of medicine. The properties of certain kinds of medicines used in attacks of common kinds of sickness are quite generally understood, and these remedies are the ones that have a place in our medicine chest. Persons who employ the Homeopathic system of medicine, can procure cases with remedies in labelled vials, and directions for use. It is not advisable to have too many things in the medicine chest. The medicines may be extended beyond those mentioned, but always be sure of their properties and effects.

Procure a bottle, each, of castor oil, paregoric, syrup of ipicac, Epsom salts, carbonate of soda, turpentine, a small bottle of laudanum, (better mark it Poison) Senna leaves. Also get a pint bottle of linseed oil and lime-water. This last is a mixture to use in case of burns and scalds. Label each bottle plainly with the name of the medicine it contains.

Procure a measuring glass, for this is the only sure way to measure a dose of medicine accurately. A "spoonful" is a very indefinite portion, as spoons differ much in size.

Provide a roll of linen, one of calico, and another of flannel, and fasten each roll with a pin. Scrape some lint also, and get some sticking plaster, so that they may be available at a moment's notice. A roll of tape, some pins, a few large needles and a spool of thread, a pair of scissors (not to be used for ordinary purposes)a feeding cup, some rubber tubing of proper size, and your chest is ready for use.

Mustard, clean lard, and various other things used in the house are frequently needed as domestic remedies, but it is impracticable as well as unnecessary to keep such articles in the medicine chest.

Remember that the articles mentioned must be good. There is so much that is adulterated of nearly everything which enters into commerce now, that one scarcely knows when he gets what he pays for. Buy only of responsible, honorable persons, and do not object to paying a good price for a good article in preference to a lower sum for a poor one.

Care must be exercised, (as has before been urged in this work), in giving medicine without the doctor's orders. Better not give medicine at all than to administer it without fully understanding the circumstances under which it is given. Fatal mistakes sometimes occur. Under the treatment of a physician a medicine is sometimes gradually increased until a patient takes a dose with beneficial effects; the same quantity taken at another time and under different circumstances would prove fatal. Opium is a common remedy in certain nervous diseases. The body seems to become accustomed to the drug after a time, and the dose has to be increased gradually to have the desired effect. When the medicine is discontinued it may have reached a quantity that would kill the patient, a few weeks later. In all cases where a medicine like opium or other soothing drug is given for a length of time, and it then ceases to be taken, if it is again administered do not begin with the quantity at which it was left off, but at the quantity given at the beginning of the illness.

DEFINITIONS.

Aperients.—Medicines that promote excretion; laxatives.

Anthelmintics.—All medicines used to discharge worms from the stomach and bowels.

Antiemetic.—Medicines which prevent or stop vomiting. The most effectual anti-emetics are opium in some of its forms, camphor, peppermint, essence of cinnamon, essence of tansy, and the carminatives in general.

Antiscorbutics — Medicines which cure the scurvy. All the acids, both mineral and vegetable are antiscorbutics. The citric acid, or the juice of lemons is the most curative. All green fresh vegetables and fruits, especially celery, dandelions and cabbages, apples, oranges and cocoa-nuts are antiscorbutics.

Absorbents.—In medicine this term signifies *taking up and neutralizing* fluids in the stomach and bowels, such as acids, water, and acid liquors. Magnesia and chalk are sometimes called absorbents. Any medicine is termed an absorbent whose effects are such as are given above or which take up moisture on other parts of the body.

Anodynes.—All those medicines which ease pain and produce sleep are called anodynes. Opium, laudanum, morphine, Dover's powders, poppy tea, hop tea, lettuce tea, belladonna, paregoric, ether, camphor, prussic acid, musk and castor and many other agents belong to this class.

Astringents.—These are substances that contract the fibres of the flesh, rendering the flesh, membranes and tissues denser and firmer Alum, sugar of lead, borax, creosote, white vitriol, blue vitriol, tanic acid, nut-galls, logwood, and white oak bark are among the most potent of this class of medicines.

Antiseptics.— Substances which arrest or correct putrefaction. A medicine which counteracts a putrecent tendency in the system as chinchonia. Acids and saline substances are antiseptics.

Antispasmodics.—Any medicine which will relieve spasms, is called antispasmodic. The most powerful are opium, ether, and camphor. Next to these are valerian, musk, castor, belladonna, cicuta, ammonia, assafœtida, and chloric ether. Many other agents will act as antispasmodics, such as cold water, ice, quinine, blue vitriol, and emetics of all kinds.

Anæsthetics.—Those agents which deprive the living body of sensation. The principal ones are chloroform, and the sulphuric and chloric ethers. Large doses of opium and other narcotics, and also alcholic liquors produce similar effects in degree. As death is not unfrequently caused by the use of the volitile liquids first mentioned, none but those familiar with their effects, should be trusted to administer them; neither should persons inhale them without having some experienced person present to watch their effects.

Cathartics.—Any medicine which increases the motion of the bowels and the number of alvine discharges; such as castor-oil, salts, aloes, rhubarb, magnesia, jalap, butternut and sulphur.

Caustics.—A caustic is a substance which eats or corrodes the flesh and solid parts of the body. The ancients used a hot iron, but the moderns employ corrosive substances. The most powerful caustics are crude potash, nitrate of silver, aqua fortis, oil of vitrol, and mariul acid. The mild caustics are red precipitate, alum, calomel, and blue vitrol.

Diuretics.—All medicines which augment the flow of the urine are called diuretics. The most certain and effectual is saltpetre, or sal nitre. Squills, sweet spirits of nitre, acetate of ammonia, balsam copaiva, parsley, wild cranberry, tartar emetic, pumpkin seeds, watermelon, and in general, all watery fluids are diuretics.

Diaphoretics.— Any medicine or any substance, which when taken into the stomach, produce a sweat, as catnip, pennyroyal and the bayberry root. The most certain diaphoretic is tartar emetic, in the dose of a fifth or quarter of a grain. Next to this is antimonial powder. Diaphoretic and sudorific mean the same thing.

Emetics.— Substances capable of exciting vomiting. They may be both vegetable and mineral. The best and safest vegetable emetics are ipecac, squills, lobelia and bayberry root. The mineral emetics most in use are tartrate of antimony, sulphate of zinc, sulphate of copper and alum. Many substances operate both as emetics and cathartics, such as thoroughwort, tobacco, and antimony. Where poisons have been taken or the stomach overloaded with food, or oppressed with indigestible substances, emetics are indispensable. In the commencement of fever, in lung affections, diseases of the throat and wind-pipe, in billious disorders and, in dropsy the utility of emetics has been demonstrated by the experience and observation of ages. Emetics are hurtful in cases of inflammation of the abdominal viscera, in ruptures, in a conflux of blood to the head, in the last stages of pregnancy, and in inflammatory and typhus fever.

Narcotics.— Agents which produce sleep, as opium, lactucarium, cicuta, belladonna and camphor.

Purgatives.—A medicine which operates upon the bowels so as to produce a number of discharges in a day, or increase the natural motion.

Sedatives.—Remedies which allay irritability, irritation, and pain.

Stimulants.—Medicines which excite the activity of the body and mind. Alchohol, wine, camphor, heat, light, mustard, peppermint, cinnamon and ginger are examples of stimulating agents. Everything which exalts the heat of the body, or the part to which it is applied, and quickens the circulation of the blood, is a stimulant.

Tonics.—Medicines which give strength to the system, such as quinine, bark, elixir, vitriol, rust of iron, wine, and bitters in general

WOUNDS.

Wounds.—The names given to various kinds of wounds arise from the manner in which they are produced and the particular part of the body injured. Each requires some peculiarity of treatment. They are designated as incised or cut, lacerated or torn, contused or bruised, punctured, gun-shot, and poisoned wounds; and some of those named from the parts injured are wounds of the arteries, of the head, throat, thorax, abdomen, joints and tendons. They are separately considered in this article, compiled from standard authorities.

"The simplest and most common wounds are those made with cutting or edged tools, such as the knife or chisel and scythe. In these wounds, the principal injury done to the parts is the mere division of the fibres of the flesh, without any contusion or laceration. They are not liable to inflame, supperate, ulcerate, or slough, under favorable circumstances, and, if properly treated, generally unite very readily. The first thing to be attended to in this, as well as most other kinds of wounds, is the bleeding. Should there be considerable bleeding, it must be stopped before any permanent dressings are applied. Bleeding from veins and small arteries may generally be arrested by a little pressure upon the wound, or on the main trunk of the artery above it. When an artery runs over a bone, there will be but little difficulty in stopping the bleeding by compressions; but if the parts underneath it are soft, it will be done with more difficulty. Large arteries will require to be tied, or dangerous bleeding may be the consequence. Small pointed forceps, or a tenaculum, is commonly used in taking up the end of an artery to tie it, but a needle, annealed in a blaze of a lamp and the point bent into a hook will be found a good substitute for a tenaculum. By wiping a wound and observing the source of the blood, the end of the artery can be seen, and seized, when it may be drawn out and tied with a small ligature of silk. The blood from the artery is very florid, and flows in jets; from a vein it flows more slowly and steadily, and is of a darker or purple color. When a ligature is applied to an artery, one end of it should be cut off near the knot, and the other left long enough to hang out of the wound at the most convenient place between the plasters, in order that it may be withdrawn after the artery has closed and sloughed. The veins never require tying, as bleeding from them can be arrested by compression upon the wound. Wounds frequently, perhaps generally, occur under circumstances and in situations where it is impossible to obtain assistance and the conveniences for dressing them. For instance, it is not unusual for a man who is chopping in the woods, or mowing in the meadows, at a distance from any habitation, to cut himself with an axe or scythe, and perhaps sever a large artery. The blood flows rapidly, he soon faints, and is unable to gain his home or get to any place where assistance can be rendered him; or, should he be barely able to drag himself along, the bleeding will be increased by the exertion, and when he arrives, his system is exhausted, and he lies many weeks or months before the wound heals and his blood vessels are replenished. Under these circumstances, the wound should be seized with one or both hands, the sides be brought together, and firm pressure made upon it, which will in a measure check the bleeding. A compress made of a folded handkerchief or a portion of some garment, should be applied, and bound on by tying a handkerchief, or a strip of cloth, or a cord, tight around it. If this should not succeed, a part of a handkerchief, a piece of cotton or linen cloth, or other soft substance, such as tow or lint, may be crowded into the wound, a compress applied over it, and bound on as before. The puff-ball, a kind of agaric, is often used for this purpose with much success, by people in the country. The constant application of snow, ice, or cold water, very much aids other means in stopping bleeding. The loss of blood may sometimes be prevented by thrusting the finger or thumb into the wound and pressing it upon the part from which the blood seems to flow, and by pinching between the thumb and finger the mouths of the vessels. The blood from an artery will always come from the side of the wound which is towards the heart, as it flows from this organ in the arteries, and towards it in the veins. When the wound is on the arm or leg, the surest, and sometimes the only, means of stopping the bleeding from an artery is by a ligature around the limb above the wound, which must be drawn tight to stop entirely the circulation, so that no pulsation can be felt in the arteries below. A moderately tight ligature around a limb will increase the bleeding from the veins, and will not lessen it from the arteries, as is daily witnessed in the operation of bleeding. A silk handkerchief, a strip of strong cloth, or a cord may be used for this purpose, and it should be so applied that a stick can be passed under it, by which a twist may be taken powerful enough to stop the circulation of the blood in the limb. The best place to apply a ligature on the arm or leg is near the body, and a compress of folded cloth over the principal artery, which is on the side of the limb, will insure the success of the operation; as by entirely stopping the flow of the blood in a part for any considerable length of time would produce swelling and serious consequences, other measures should be immediately taken to secure the arteries permanently. It should be observed that the introduction of any foreign body into a wound to stop the bleeding is only to be resorted to in extreme cases, in which nothing better can be done, as by preventing the wound from being accurately closed, the healing process will be retarded. When such means are necessarily used, it should only be for a short time, until more suitable remedies could be employed. The bleeding being staunched and proper assistance and suitable dressings obtained, all foreign substances should be removed, the wound cleansed and closed, and there will still be a chance for union by the first intention to take place. The object in dressing a wound is to favor its healing immediately and without the formation of matter. When a wound heals in this manner, it is said to heal by the first intention. As it is evident that wounds cannot heal by the first intention unless its sides are in contact, the propriety of accurately closing and retaining the parts as nearly as possible in their natural situation by plasters and stitches must be manifest to every one. When the edges of a cut wound are retained in close contact with each other it is not unusual for it to unite in a few days; but if allowed to remain unclosed and filled with lint and salves or spirits, as many weeks will be required for it to fill up and close by the tedious process of granulation. The best way to hold the sides of wounds together is by strips of sticking plaster. Before the plasters are applied, the wound and skin around it should be wiped dry in order that the plasters may adhere firmly. The plaster should be cut into long narrow strips which should be warmed as they are applied. In applying the strips, one end should be attached at a little distance from the wound on one side, the wound being held together, the plaster should be carried over it in such a manner as to hold the edges in accurate and close contact. If the wound be long, several strips should be used and a very narrow space left between them for the blood to escape that may ooze from the wound, or the matter, should any form, before they are removed. A pledget of lint or soft cloth should be applied over the plaster and the whole secured by a bandage which ought not to be so tight as to impede the circulation, except it may be necessary to keep up some degree of compression for a short time, to guard against a return of the bleeding. If the wound does not bleed much, nor inflame and swell, the dressing will not require to be removed before the sixth or seventh day. Care should always be taken that the wound be not closed over a large clot of blood, as this will prevent it from healing inside, and if it unite externally it will require to be reopened and the cure will be rendered tedious. When the dressings are removed great care must be taken that the wound be not drawn asunder, should the adhe be imperfect, for an accident of this kind would at least make healing process doubly tedious, if it did not excite inflammat To avoid this, the plaster should be peeled off in a direction leng wise to the wound. One strip only at a time should be remove and if the union be not perfect the wound may be wiped clean and a fresh one applied before another is disturbed. When a wound heals kindly by the first intention, one or two dressings are all that are necessary; but if it suppurate it will require to be dressed daily and to be cleaned each time with castile soapsuds or spirits and water. If it be disposed to gape and is not much inflamed the adhesive plasters may be continued by which it may gradually be drawn together, and the discharge of matter will thereby be lessened and the scar diminished. Should there be much inflammation and swelling, the plasters must be taken off and the wound poulticed until the inflammation is subdued, after which it may be dressed with simple cerate, or other mild salve, upon lint or old muslin, until the cure is completed.

"Some incised wounds are so large, or the sides are drawn so far apart by the contraction of the flesh that they cannot be brought together and retained in proximity, without the use of stitches, called by surgeons, sutures. When it is necessary to close the wound by sutures the thread or ligature should be small, and no more stitches taken than are absolutely necessary to fulfill the indication, and they should be removed in six or seven days, or as soon as it can be done without endangering a reopening of the wound. When suppuration takes place, the stitches should be removed, as they can no longer answer any useful purpose, and will add to the irritation and increase the difficulty of curing the wound. If a wound is angular a stitch should be taken in the angle and the plaster so applied as to aid it in holding the parts in a natural situation; or if the suture appear to be sufficient without the plasters they may be omitted, and the sore dressed with simple cerate and light dressings. In most wounds however, the sticking plasters will be the most suitable dressing even when the sutures are employed. We have the best authority for the opinion that sutures, if not too large or too numerous, do not prevent a wound from healing readily and kindly. Wounds on the face should be dressed with great care in order to prevent an unseemly scar.

"The sooner a wound is dressed the greater will be the chance of its healing by the first intention, or without suppuration.

"'Parts which are nearly separated readily unite as the finger or nose where it has been cut or torn and a suture is required to aid its union. Parts entirely separated will sometimes unite. When adhesion of an incised wound can be completely effected the danger ceases. An incised wound into the abdomen, exposing its different viscera, is not followed by danger if the wound is made to unite. Wounds of the chest even complicated with injury to the lungs, cease to be dangerous under the adhesive process. Wounds of the brain will unite by adhesion and the patient recover,

The above facts quoted from the highest English authority, show the propriety and enforce the necessity of always endeavoring to effect, if possible, the union of all incised wounds by the first intention.

'*Lacerated or Torn Wounds* differ from cut wounds in the great amount of injury done to the parts by the violence which has produced them. The flesh is generally more or less contused or bruised and its vitality and consequently its aptness to heal diminished. These wounds are often produced by machinery and such implements and substances as tear the fibers asunder, and great force is therefore required to produce them. Torn wounds of whatever magnitude seldom bleed much. Even large arteries may be torn asunder without occasioning any dangerous loss of blood We have in several instances, seen an arm torn in peices and one completely torn off above the elbow, with less bleeding than sometimes attends a cut finger. In dressing these wounds, however, should there be bleeding, the first thing to be done will be to arrest it by compression — a ligature above the wound if it be upon a limb — by tying the artery, or other means as pointed out under incised wounds. It frequently happens that extraneous bodies, such as pieces of stone, wood, glass or iron, are imbedded in a wound of this kind. These should be carefully removed if practicable, and the wound cleansed and bathed with laudanum or spirits before the dressings are applied. Lacerated wounds seldom entirely heal without maturating or by the first intention, and are much more liable to inflame than those produced by cutting instruments; but this should not deter us from attempting to produce a union of as large a portion of them as is possible by approximating and retaining the edges by plasters and bandages. Sutures are seldom necessary except perhaps upon the face. We have often used them upon the face, and particularly over the eye where a flap of the wound was hanging down and difficult to keep in place, with great advantage, the wound healing kindly and leaving only a small scar. It is not necessary or practicable in applying sticking plasters to lacerated wounds to retain the edges in such accurate close contact as in cut wounds, and wider spaces should be left between the strips, though the more perfectly this can be done at the first dressing without violence or impeding the circulation, the sooner will union take place and the less will be the deformity. If one half or one third of the wound adhere by the first intention it will shorten the time required to heal it, and lessen the amount of purulent discharge, a consideration of some importance in large wounds. The dressings should be light and the bandages easy. Tight bandages impede the circulation, prevent the restoration of healthy action and thereby increase the danger of sloughing. If the wound be painful the dressing may be saturated with cold water, laudanum, a solution of opium, spirits of camphor or rum, and if it swells and the dressings become uncomfortable they must be removed, being careful not to tear apart the wound and break up the adhesions that may have formed. This kind of wound often requires, after a few days, to be poulticed in order to favor the suppurative process and subdue the inflammation. Even in the beginning when it is not deemed necessary or proper to attempt a union by the first intention such wounds will do well under the use of soft bread and milk poultices. The poultices should be changed often and if the sore discharges matter it should be frequently cleansed with warm suds and spirits. After the inflammation has subsided some kind of salve may be applied or adhesive plasters be used and the wound gradually closed by drawing the edges near together. During the healing process in those wounds in which it is desirable to avoid deformity, the sticking plasters are particularly useful They should be so applied as to constantly draw the flesh together into its natural situation. Torn wounds are often very painful and when large a severe shock is given to the nervous system and locked-jaw may be a consequence. With the view of allaying irritation, easing the pain, and preventing any serious effects upon the nervous system, a full dose of laudanum or other anodyne should be taken immediately on receiving the injury, and repeated as often as circumstances may require. Should there be appearances of gangrene and a disposition to slough, the case must be treated with wild indigo, yeast or charcoal poultices, a wash of chloride of soda, tonics and a nutrative diet.

"*Contused or Bruised Wounds.*—These wounds are produced by blows and falls, which may not break the skin, but which severely injure the parts underneath. Contused and lacerated wounds are often complicated, but when the injury done to the flesh is considerable and to the skin but little, no regard need be paid to the latter, and the case should be treated as a simple contused wound

Bruised wounds rarely bleed externally, but the blood often escapes from the injured vessels into the cellular substance and among the muscles, causing swelling, and showing through the skin, which is the cause of the dark or black and blue color observed in these injuries. In very serious contusions the nerves are so deadened that the sensibility of the part is destroyed and the pain is less than it is in those that are less severe. When the bruise is not very severe, the blood which is effused in the flesh will be gradually absorbed, the color changed to a brownish or yellowish, and finally disappear, the swelling subside, and a perfect restoration take place in the course of a week or two; but if the parts have been injured beyond a certain degree, the vitality much lessened or destroyed, suppuration and sloughing will follow, and the breach of continuity be afterwards repaired by granulation and cicitrization.

"The best applications for recent bruises are cold water, spirits and water, laudanum, ether, solution of sal-ammoniac, salt and vinegar, or brandy, and other cold and stimulating washes. These stimulate the action of the vessels, hasten reaction, and promote absorption of the effused blood. When reaction comes on, if the wound is large and there is a tendency to inflammation, leeching and cathartic medicines will be the most suitable remedies. In those cases in which there is more or less laceration or breach of continuity, and where suppuration and sloughing are to be expected, fomentations and poultices must be discontinued, and the sore treated as a simple ulcer. The general treatment will consist in giving opium to allay irritations, cathartics to keep the bowels free, and tonics to support the strength and favor the digestive and sloughing processes. During the healing process the sides of the sore should be approximated by adhesive plasters, as in lacerated wounds.

"*Punctured Wounds* are those made by narrow, sharp-pointed bodies, such as the sword, bayonet, scissors, hooks, points of broken bones, stubs, pitchforks, awls, needles, forks, and various other substances and implements. They penetrate deep in proportion to the external openings and are infinitely more dangerous than incised wounds. The fibres of the flesh are forced asunder, instead of being divided as by edged tools. Inflammation of the absorbent vessels extending to parts remote from the puncture, as from the hand to the arm-pit, or from the foot to the groin, is not an unfrequent consequence. Abcesses sometimes form in the track of the absorbents, and even in the glands in which these vessels terminate. The pain produced by punctures is sometimes intolerable, and serious nervous affections, and even locked-jaw, may supervene.

"In the treatment of these wounds, the most important thing to be done is to relieve the pain and quiet the nerves by the use of anodynes, both externally and internally employed. The wound should be bathed with laudanum or a solution of opium, and a quantity given internally to assuage the pain and compose the system. If laudanum cannot be obtained, some kind of spirits may be used as a substitute. In the meantime, if any foreign body has been left in the wound, such as a stub or a portion of the instrument with which the wound was made, for instance, it should be removed immediately, if it can be done without a greater risk than would result from allowing it to remain.

"It is recommended by some to convert a punctured into an incised wound, by enlarging the orifice with a lancet or other sharp instrument; and others advise the application of powerful caustics in addition to enlarging the orifice. The nitrate of silver, nitric acid, and caustic potash are used for this purpose. Stimulating and anodyne lotions to facilitate reaction, leeches and cold lotions to prevent or subdue inflammation, fomentations and poultices to promote maturation and granulation, are the remedies usually advised, according to the stage of the case. We are of the opinion, however, that a large proportion of punctured wounds may be successfully treated by the internal use of anodynes, and the immediate and constant application of warm poultices, saturated with laudanum or solution of opium. Fomentations with poppy-heads, hops, apple Peru, hemlock or hen-bane, may have an effect equally as good as the poultices and opium. Should abcesses form, they should be opened as soon as the existence of matter can be ascertained.

"*Gun-Shot Wounds.*—These wounds partake of the character of both lacerated and contused wounds. The vitality of the parts in the vicinity of the injury is destroyed, and more or less sloughing is the usual consequence. They seldom bleed much except when very large vessels are divided. The hole made by the ball is rather less than the size of the ball, and its edges are generally of a livid color. A numbness or torpor of the limb, or of the whole system, is a common effect, but the symptoms differ materially in different persons. The difference in the velocity of the ball produces a difference in the symptoms. The edges of the wound where the ball enters are turned inwards, but if it passes through, the edges of the hole where it escapes are ragged and everted. In the treatment of gun-shot wounds, there are three indications to be fulfilled. First, to remove all foreign or extraneous bodies; second, to prevent excessive inflammation; and third, to promote suppuration. The general management of these wounds is similar to that of lacerated and contused wounds, hence it is not necessary to repeat what has been said upon the subject.

" *Wounds of the Throat.*—Sometimes these occur accidentally, but to attempts to commit suicide may be traced a majority of these wounds. When the carotid arteries are divided, death almost immediately ensues; but as the incision is generally made high up, where the arteries are very deep, these vessels, in a great proportion of instances, escape, and the pharynx, larynx, trachea, and œsophagus are the principal parts wounded. Wounds in the throat should be closed by several sutures, after securing the blood-vessels and stopping the bleeding. The sutures should be put through the integuments, and sticking plasters applied to assist in retaining the sides of the wound together. The head must be brought forward upon the chest; but little, if anything, should be swallowed; the mouth should be frequently moistened with lemon dipped in water, and the patient be supported with glysters of gruel or broth, to which opium or laudanum is added to prevent them from returning. Where food can be given by the mouth, jellies are the most suitable, and a little solid food will excite less irritation than liquids. At the end of a week the sutures should be removed, but the plasters ought to be continued until the wound is perfectly healed. Wounds that divide the trachea low down on the neck, and those in which the œsophagus are injured, are more dangerous than those which are higher up, and those in which the œsophagus escapes. Sutures should be used in these cases, but plasters are objected to, as they prevent the discharge of blood and air in coughing, and thereby produce additional difficulty of breathing, and occasion emphysema. In extensive wounds of the pharynx, in which the ability to swallow is entirely destroyed, the stomach-pump may sometimes be used with great advantage in supplying the patient with nourishment. The objection to the stomach-pump, in ordinary cases, is that it is necessary to throw the head back in order to introduce the tube, which is liable to prevent or break up adhesion of the wound.

" *Wounds of the Tendons.*—The frequency with which the tendons are divided by the operation of tenotomy for the correction of dedeformities, and the infrequency of any serious effects following the simple division of them accidentally, have led to the conclusion that these wounds are not as formidable as was formerly supposed. Punctured and lacerated wounds of the tendons sometimes produce serious nervous affections, or, rarely, locked-jaw; but the mere division of them is unattended with danger, and the only consequence in addition to the effects of the wounds in general, is the loss of motion for a short time in the art to which the tendon is attached.

It has been found that when a tendon is divided, the ends are separated to a greater or less extent by the contraction of the muscles, that the space is filled up with a new substance, and the motion of the part restored in course of two or three weeks. Sir Astley Cooper recommends, when the tendons are divided, that the ends be approximated by the posture of the limb, which must, in order to effect this, be retained in a more or less restrained position until the wound heals. When the heel-cord—*tendo achilles*—is divided, for instance, a high-heeled shoe, straps and rollers are advised, to keep the heel up; the wound in the skin is then to be closed, all pressure avoided, and cooling lotions applied; a contraction of the muscles takes place during the healing process, and the heel continues to be drawn up after the wound is united. To remedy this deformity, the heel of the shoe is gradually lowered, until finally the muscles and tendon are sufficiently stretched to allow the heel to come down to a level with the foot. This may all be necessary, but we apprehend that raising the heel much above a level and keeping the foot in this uncomfortable position is productive of no essential benefit, and that all that is required is to prevent the heel from falling too low, by which the tendon would be elongated and the heel lowered and the toes raised. When the tendons are divided by a cutting instrument the wound over them should be accurately closed, and the union, by the first intention, in every way promoted. The limb, while the wound is healing, should be kept in the easiest and most natural position, so that no deformity or inconvenient position will be felt when the cure is completed.

"The heel-cord, and several other tendons and muscles, are sometimes lacerated by violent efforts and strains. In these cases, as there is no external wound, all the treatment necessary is to keep the limb in a proper position to prevent deformity, and to guard against inflammation by the ordinary means. Lacerated, bruised and punctured wounds, in which the tendons are injured, must be managed according to the general principles of treating these kinds of wounds. We would recommend, in all wounds of the tendons and other deep-seated parts in which there is an opening in the skin and flesh covering them, that the external wound be closed as soon and as accurately as the circumstances of the case will permit; with the view of preventing the action of the air upon the parts that are not accustomed to it, as this is undoubtedly one of the principal causes of inflammation. It is now a well-established fact that tendons and muscles heal in a very short time, and without any considerable degree of inflammation when divided under the skin through a small valvular opening

"*Wounds of the Joints* penetrating the capsular ligaments are trivial or dangerous, very much in proportion to the skill that is exercised in treating them. 'If the patient has a poultice applied, or if the utmost attention is not paid to the immediate closure of the wound, inflammation of the synovial membrane arises, and suppuration ensues. Violent constitutional irritation succeeds, shivering, heat, flushing, and profuse perspiration; generally great swelling and excessive pain in the joints. Abcesses form in different parts of the joint, one succeeding another until the strength becomes exhausted.' In young and healthy persons these wounds are much less dangerous than in those who are weak and advanced in life. Wounds of the joints, when improperly managed, are tedious in healing, and a stiffness of the joints, or anchylosis, is the usual consequence. 'But,' says the author above quoted, 'all ill-effects from wounds of joints may be prevented by care and skillful treatment.' The wound should be closed with a needle and thread, passing through the skin only and bringing the edges perfectly together. A pledget of lint dipped in blood is then to be applied over the surface of the wound, and over this the adhesive plasters. The joint must then be covered with soft linen, moistened with lead water, or spirits and water; a splint applied to the limb to prevent its motion, and a roller bandage to confine the other dressings. The bandage must not be so tight as to impede the circulation or press much upon the wound.

"Purging medicines should be avoided as much as possible, and a rigid abstinence enforced. In eight days the thread may be cut and drawn away, but the adhesive plaster and lotion should be continued. Three weeks should elapse before the patient is permitted to quit the bed. Inflammation and suppuration, should they ensue, should be treated as in other cases. Should a stiffness of the joint remain, frictions with oily liniments, exercise and motion of the limb, persevered in for a long time, will be the best means of restoring it."

Wounds of the Arteries and Veins.—These have been so fully referred to under other heads, that it is hardly necessary to say more upon the subject.

Wounds of the Head.—If a wound of the head is limited to the scalp without penetrating an artery, no peculiarity of treatment is necessary. The usual treatment of contusions may be adopted. If an artery is cut, it may be difficult to stop the bleeding, as it is not always easily found. The bleeding must be arrested by compression. If the artery is found, and is torn and not entirely divided, the advice of some surgeons is to sever it completely with a lancet, which will allow it to retreat within the flesh, or by a suture. If the latter mode is adopted, the stitch should be taken deep in the scalp, and the wound firmly closed, which will usually stop the bleeding, after which the ordinary dressings are to be applied.

In case the skull is fractured, if there is not compression of the brain, the proper treatment is to guard against inflammation. If there is compression, indicated by a slow pulse, dilated pupils, squinting, sterterous breathing, stupor or complete insensibility, the operation of trepanning, by which the depressed portion of the bone is raised, will be advisable.

When a person is stunned, and more or less completely deprived of sense and the power of motion, vomiting is a common symptom, and if the injury is more serious, he is insensible, or aroused with difficulty, the memory is lost, and there is aberration of the mind. Immediately after the injury is received the countenance is pale and death-like, the pulse slow, soft and small, all the powers of life are depressed, and a violent struggle of nature is required to bring on action and restore the vital functions.

Send for a surgeon. The common practice under these circumstances has been to bleed the patient; and if he did not recover, it was attributed by most persons, cognizant of the case, that he had not been bled enough. But it has come to be admitted that not only is blood-letting oftentimes carried too far in such cases, but that the use of the lancet too early is often productive of serious consequences. A celebrated author, after strenuously recommending bleeding as a means of preventing and curing inflammation, says: "But do not go on to bleeding largely, for you would by this means reduce the strength of your patient too much and prevent the reparative process of nature. You are to use bleeding as a means to prevent inflammation, *not as a matter of course*, the moment you are called to a patient under concussion. You will always find the pulse very weak and scarcely perceptible at the moment of the injury; *wait till the pulse rises and reaction is indicated*, and then extract blood." And further, he says: "Do not extract blood indiscriminately; use the lancet with caution, lest you reduce the animal powers too much and evade a favorable termination of your case. The use of the lancet is not so general now as formerly. The more rational practice, in cases of concussion of the brain and other internal organs, is to use cordials and stimulants, both externally and internally, if the patient can swallow, until reaction comes on and the pulse rises, and then to employ counter-irritants, etc., as the circumstances of the particular case may indicate.

Sprains.—These are occasioned by a sudden stretch of the tendons or ligaments—a subluxation of a joint. Sometimes a sprain is more painful and longer in getting well than a dislocation, by reason of the greater injury received by the cords and ligaments. Pain and swelling of the injured part attends a sprain, and sometimes discoloration is seen, which results from a rupture of the blood vessels. The wrists, ankles and knees are the parts in which these injuries occur. Ladanum or morphine, given in proportion to the suffering, is usually administered, and the injured part wet with the same and then covered with a soft, warm flax-seed or white bread poultice, which should be renewed as often as it grows hard. Cold applications in the first instance, before any inflammation has come on, and the vitality of the part returns, are not recommended. Should excessive inflammation appear, and the part become hot, dry and sore, leeches should be applied until the inflammation is reduced. After the leeches have been removed, lead water and a solution of white vitriol should be applied. The limb should be kept at rest, and the diet should be light. Bathing the part with efficacious liniments, opodeldoc and laudanum, is a good remedy. In cold weather a sprained joint should be wrapped up in flannel and kept comfortably warm. The great object sought is to prevent inflammation and re-establish the circulation.

BONES.

Bones in the Human Body.—Some knowledge of the number and different kinds of bones in the human body is very necessary. The study of human physiology in the schools of the country should be more general than it now is, for very much benefit would thereby be secured, much suffering oftentimes alleviated, and the loss of a valuable life sometimes prevented. The subjoined facts will be serviceable. They are taken from scientific sources.

The whole number of bones in the human body is two hundred and forty-eight. There are eight in the skull, which appears to be composed of one. There are twenty-four bones in the spine, which constitute the vertebræ. Of these seven are in the neck, twelve to which the twenty-four ribs are attached, and five lumbar bones.

In each of the vertebræ there is a hole or foramen about the size of the forefinger, through which the spinal marrow passes from the brain down to the base of the trunk.

In the upper extremities there are sixty-four bones—that is, in the shoulder, arm, wrist and fingers on each side, thirty-two bones. In both of the legs, from the thigh-bone down, there are sixty-eight bones, or thirty-four bones in each of the lower extremities. In the feet and toes, there are forty-six bones.

The frame-work of the chest is formed of twenty-five bones in addition to the twelve spinal bones, to-wit: the sternum or breast-bone, and twenty-four ribs. There are fourteen long ribs and ten short ones. The long ribs, seven on each side, join the sternum or breast-bone. The long ribs are called *true*, and the short ones are called *false*. The pelvis or basin is formed by two semi-circular, thick, strong bones, called the ossa-innominati, or unnamed bones, and by the sacrum.

The teeth are thirty-two in number; eight cutting-teeth or incisors, four dog or canine teeth, and twenty double teeth. In the mechanism of the ears there are eight little bones, four in each, which form a small chain. The frame-work of the face consists of fourteen bones. The tongue has one bone at its base, shaped nearly like the letter V. The termination of the spinal column is formed by two bones; one is called the sacrum, and the other the coccygia. The sacrum joins the two hip-bones, or ossa-innominati.

There are sixty-eight bones in the legs and feet.

Some of the bones in the body are hollow, and others are solid The bones are the basis of the system; to them the muscles are attached, and they support all the other parts of the body, giving it shape; they contain and defend all the vital organs.

The bones of different individuals differ in length, size and thickness.

The bones of some people comprise a great part of the weight of the body, while those of others are remarkably light.

The bones can be stained a reddish color while in the living animal. This is done by eating, for two or three weeks, a substance called madder.

Cartilages, membranes and bones are, in the formation of the system, all of the same structure and substance. Membrane is a sheet of gelatine or jelly interspersed with vessels and nerves, and containing a small proportion of albumen, which gives it a degree of firmness. Cartilage is a membrane with a larger proportion of albumen, which gives it a still greater degree of firmness. The stiffness and strength of bone are owing to the addition of lime or earthy matter to the cartilage. The cartilage secretes earthy matter from the blood, and becomes gradually hardened. In young animals—in calves, for instance—the bones are mere jelly or gristle, but as they grow older, earthy matter is gradually deposited, which renders them hard.

The surface of bones is hard and compact, but the inside is spongy and admits the entrance of numerous blood vessels. They are covered by a tough membrane called periosteum, which strongly adheres to them, and affords a bed for blood-vessels. In a state of health the bones are insensible, but they are not susceptible of inflammation like soft parts, and in this case become actutely sensitive; of this the teeth are a striking example.

The marrow is a fatty substance filled with a great number of blood-vessels. The bones are composed of fifty-one parts in a hundred of gelatine, thirty-seven parts of phosphate of lime, ten parts of the carbonate of lime or chalk, with one or two parts of magnesia. Lime and magnesia are the earthy substances which give the bones their hardness.

Between each bone composing the spine there is a thick layer of cartilaginous substance which forms a bed for each separate bone. The weight of the superincumbent body pressing upon this substance during the day, while the person is in an erect position, brings the bones of the spine so that he is an inch or so shorter at night than in the morning. Tall people appear to the most advantage in the evening.

Broken Bones.—It happens not infrequently that bones are broken, and surgical help cannot be readily had. In such cases, examine the injury, and if it is found that the limb, or whatever it may be, is not a complicated injury, it may be set by some one who has sufficient knowledge and nerve to attempt the operation. It is easy to detect a broken limb; the person is unable to raise it, and it is useless and painful. Where a surgeon is within call, always send for him in cases of broken limbs or other bones.

Fracture of the Skull, or Bones of the Face.—In all accidents to the head or face which renders the person insensible, send for medical assistance at once. In the meantime, raise the head and apply cold water, especially if the wound bleeds. All noise or excitement must be avoided.

Breaking the Collar-Bone.—The location of the collar-bone is such that it usually breaks near the middle. In an aged person the collar-bone usually breaks with a clean fracture, while in children the bone will bend to some extent and then not break short off. When the bone is broken it will be smooth and even on one side, while on the other a lump will be seen, caused by the broken ends rising one over the other. In bringing the shoulder forward, the parts will be seen to move, and the motion will cause pain. This, however, is not discoverable in children. Dr. Hope recommends the following treatment: Get a round pad the thickness of a man's arm and five inches long. Push the shoulder backwards, and press with the other hand on the fracture till you get it into its place; put the pad into the arm-pit, and secure the arm with a bandage around the body; raise the fore-arm well up in the sling. Watch the case carefully while it is healing, and see that the bone does not slip out of its place.

Broken Ribs without a Wound.—The symptoms are, pain on taking a deep breath, or when a pressure comes upon the injury. Pressing on the ends of the ribs near the back-bone will also produce pain at the place where the ribs are broken. In case of a severe bruise, only, hot fomentations should be applied, or a hot poultice; next put a flannel bandage six inches wide around the chest over the wound, draw it tight, and secure it by sewing with large stitches, employing the "herring-bone stitch," so that it may be tightened from day to day. If there be spitting of blood, the patient must be kept quiet. Do not give stimulants.

Broken Ribs with a Wound.—The same treatment is to be employed as above, if the wound is simply a scratch; but if it be deep put on some folds of wet rag, and a bandage. The person should *lie upon the injured side,* and be kept quiet until surgical aid arrives. Do not forget this.

Arm Above the Elbow.—There is but one bone from the shoulder to the elbow. Four splints, each with a soft pad, are required; they should reach from the shoulder to the elbow. Place one on each side, one behind and one before, and secure all with a bandage. The arm must be carried in a sling.

Elbow Joint.—A fall or blow sometimes breaks the bone which projects at the point of the elbow. The arm is useless. By comparing the two arms it will be found that the point is drawn up into the back of the upper arm. Straighten the arm and keep it in that position. A long splint, well padded, must be placed on the inside of the arm.

Arm, Below the Elbow.—There are two bones below the elbow, and one or both may be broken. Take hold of the wrist and move the arm, and the place where the bone is broken will easily be detected. Bend the arm, keeping the thumb uppermost, as though you would lay the limb against the chest; one splint must be placed on the inside from the palm of the hand to the bend of the arm, and another splint along the back of the hand to a little beyond the elbow; to keep them steady, apply a wet bandage, and carry the arm in a sling. In bandaging, allow the swelling of the arm, which, for two or three days, follows all fractures.

Hand, Foot, or Ankles.—Hands are very often crushed by machinery. The feet and ankles are not so liable to injury as the hands, but accidents are not infrequent in which these members are broken. The bones here are solid, which is a great advantage, for if they were hollow there would be increased danger of compound fractures, or crushing into more fragments. Bathe in cold water; wrap the part in several folds of cotton or linen cloth and keep wet in cold water. If no water is at hand, apply green grass; and, if any distance is to be travelled, hold the hand as high as possible.

Leg Below the Knee.—As in the forearm, there are two bones in the leg below the knee. When the small bone is broken it is sometimes difficult to find it; the large bone acts as a splint, and therefore there is not much use to find the broken place, if it is not easily discovered. Let us bear in mind that nature *cures* broken bones; all that we can do is to put them in their places and keep them there. If the large bone of this part of the leg is broken, the place will be readily found, as there is so little flesh on the front portion of the limb. Two small rollers are necessary, about an inch or so in diameter and long enough to reach from the knee to a little beyond the foot; the handle of a broom, cut in two pieces, will answer. An ordinary pillow-slip or piece of cotton cloth or calico similar in size, is needed, each end of which is rolled round the two rollers, and sewed on. Lay a pillow lengthwise in this, and place the leg thereon; then bring up the rollers, rolling the calico or cotton cloth round them till it comes half way up to the foot and half way up to the knee joint. Take two or three pieces of tape and pass them under, bringing the pillow against the leg; now tie them, keeping the foot in an upright position.

Thigh-Bone.—This is usually a very painful accident, as the muscles contract and tend to draw the broken bone out of its place. If the accident happens away from home, in the fields or woods, get some reeds, stiff straw, or pieces of thin board, and bind the broken limb rather tightly, using handkerchiefs, suspenders, or strips of cloth. Great care must be observed in moving the patient. The most satisfactory way to carry a wounded person is on some form of litter, borne by four persons. The regular stretcher is the best thing in this case, but a door with a mattrass and pillow will form a very comfortable means of transport When the broken ends of the limb are in place the patient may be moved in a carriage or spring wagon some distance, if the vehicle is carefully driven. When none of these methods is available, a blanket may be used to carry a patient in for a short distance; or, if four good poles can be procured and fastened together to form a frame-work, the blanket can be tied to the corners, and will then be much more efficient and easy to carry. When the patient reaches home, if the pain is severe, a strong bandage may be put round the ankle, crossed over the instep, the ends brought together under the foot. To this attach a weight—say, of about six or eight pounds—and let it hang over the foot of the bed, so as to draw the leg down. It will give great relief.

Fracture of the Knee-Cap.—This is nearly always caused by a fall and concussion. With a fractured knee-cap, the power of standing on that leg is gone. The leg must be kept straight, and the splint placed on the back of the limb. If the patient is to be moved, a strong bandage must be placed around the neck and under the foot, drawing it sufficiently tight to entirely support the weight of the leg.

A writer on Domestic Surgery says:—"There are certain rules with regard to carrying wounded and injured persons on a stretcher which should be remembered. A stretcher should be carried by four men rather than by two, and should be carried by the hands and not on the shoulders; the drawbacks to this method consist in the difficulty of finding, in an emergency, four men of the same height, so that a level position may be secured; and also that any tilting of the stretcher may throw the patient off from such a height, and seriously aggravate his injury. And besides, the raising and lowering of the burden is not an easy matter, and is apt to frighten the patient when not skillfully performed.

"It is *not* advisable that the bearers of a stretcher should 'keep step;' if only two men are carrying a stretcher, and they march 'in step,' the load they are carrying will be swayed to the right and left side alternately, to the great discomfort of the patient; but if one advances his right foot and the other his left, the burden will be kept perfectly even. The same rule applies to the case of four bearers, only here the front and rear men of *opposite* sides should keep step and be out of step with their companions.

In the case of a badly sprained ankle, or a crushed foot, it will be sometimes convient to carry a patient between two bearers in a sitting position or semi-recumbent. The opposite hands of the bearers are interlaced under the thighs and behind the loins of the patient, he putting his arms round the bearers' necks. This is a trying method, and can only be endured for a short distance, unless the patient is of very light weight. An easier method is for two men to interlace opposite hands in front, and place the other hands on each other's shoulders, so as to support the patient behind. Thus the weight falls chiefly on the two arms behind him."

DISLOCATIONS.

Whenever it is practicable or possible, a dislocation, like a fracture should be submitted to the care of a surgeon as soon as possible. When a bone has slipped from its socket the limb is useless, and is more or less painful. The locality of the dislocated joint is deformed. The frequency of these accidents renders a knowledge of their treatment very necessary. The information we give is from high authority in surgical science. It is chiefly from a compilation of "Popular Medicine," by distinguished medical men, and may be fully relied upon.

Let us premise by saying that before attempting to put a dislocated limb in place, be sure to ascertain that it is not fractured. This will save much excruciating pain, and perhaps additional injury to the patient.

Dislocation of the Ankle.—When the ankle joint is put out of place the foot is either turned outwards or inwards, or it is pushed forwards or backwards. In a majority of cases the foot is thrown outwards, its inner edge resting on the ground. To set the ankle, place the patient upon a bed on his injured side, and bend the leg in order to relax the stretched muscles. An assistant should grasp the foot and pull it gradually in a line with the leg. The thigh must be held fast and the shin-bone pressed downwards to force it into place. The foot must always be drawn slowly and steadily to give the muscles and cords time to relax. After the ankle is set, place a bandage snugly around it. Keep it wet with vinegar or some kind of spirits.

When the dislocation is outwards, the foot is turned inwards, its outer edge resting upon the ground. In this case the extension is made in the same way as in the first. One person takes hold of the thigh and holds it firmly while another stretches the foot and the operator presses the head of the shin bone inwards towards its proper place. The limb should rest on its outer side after being set.

When the dislocation is forwards the foot is shortened and the heel is lengthened. In this case the extension is made as before, and the bone must be pushed into the socket. If the dislocation is backwards, the foot is lengthened and the heel shortened; the shin-bone or tibia, in this case must he pushed forwards while the proper extension, by stretching, is made.

In dislocations of the ankle the joint must be supported by splints pads, and bandages, and kept perfectly still.

Elbow Out of Joint.—The elbow joint may be dislocated in different directions, but the dislocation of both bones of the forearm backwards, is the most serious. To set this joint, set the patient in a chair, and then place your knee on the inner side of the elbow joint; the paitent's fore-arm must be bent, and, at the same time, both bones of the forearm pressed by the knee, so as to separate them from the humerus. (or large bone of the upper arm,) and to raise the hooked end of the ulna or large bone of the forearm from the hollow in the humerus where it is lodged. Whilst the pressure is kept up by the knee, the arm is to be forcibly and gradually bent, and the bones will slide into their places.

A proper bandage must be placed around them and kept wet with warm vinegar or a solution of muriate of ammonia—sal ammonia. All the other kinds of dislocations of this joint are set in nearly the same way. The principal thing to be attended to is, to make extension enough for the heads of the bones to clear each other and to slide into their places.

Dislocation of the Jaw.—The lower joint may be put out of joint by blows, falls, and sometimes by yawning. The jaw is easily set. The operator has only to put his two thumbs as far into the mouth of the patient as he can, and to press them down, while the chin is gently raised. The bones slide easily into their places.

Dislocation of the Knee Joint.—The knee joint may be displaced in four different directions: inwards, outwards, forwards, backwards but the bones are replaced in the same way in all. A firm, constant, gradual extension of the leg is all that is required to enable the heads of the bones to ride over each other and slide into their places. The thigh must be held fast by one assistant, while another pulls upon the leg. Great injury is often done to the ligaments in a dislocation of the knee, followed by inflammation. In this case, leeches, salts, and other means of reducing inflammation must be used.

Dislocation of the Knee-Pan.—The knee-pan may be displaced in three ways: outwards, inwards, and upwards. In setting this bone, the patient is placed upon a bed or the floor, and the leg raised by lifting it at the heel in order to relax the muscles. The operator is then to press on the edge of the pan which is the most distant from the joint; by this means the inner edge of the bone is raised over the elevated portion of the thigh bone, called the condyle, and the muscles draw the knee-pan into place. The same applications are to be made to this as to the other dislocations.

Dislocations of the Neck.—When the neck is dislocated, the patient is deprived of all sense and motion, and the chin lies upon the breast. The bones of the neck are set simply by extension. If the head is gently pulled in a line with the body, while the patient lies upon his back, the bones will easily slide into their places. As soon as the bones are set the patient begins to breathe. In a case of this kind *instant action* is demanded.

Dislocation of the Ribs.— The ends of the ribs which join the backbone are said sometimes to be displaced by falls and strains. To set a disjointed rib the patient must be laid upon the floor or a table, face downwards, while the operator endeavors to crowd the head of the bone into its place. Dislocations of the ribs are not of frequent occurrence.

Dislocation of the Shoulder.—The shoulder may be dislocated in three several ways; it may be thrown down into the armpit, drove forward upon the collar bone, or backward upon the shoulder blade. It is most commonly drove down into the armpit. In the last case the patient cannot raise his hand to his head, and if the elbow is carried outwards at right angles with the trunk, the head of the bone can be distinctly felt in the arm-pit. The arm is rather longer than the other, and the elbow is pushed off from the side. It commonly occurs from falling upon the shoulder. To set the shoulder joint, the patient must be placed in a chair and the shoulder blade confined by a long, strong strip of new cotton cloth passed under the arm and over the well shoulder; or the arm may be put through a hole in the cotton bandage, and the bandage drawn over the shoulder blade; one or more persons must hold fast to the shoulder blade while another makes an extension of the arm. A handkerchief or towel is sometimes tied around the arm just above the elbow to pull upon. The operator must put his knee into the armpit and when the proper extension is made, lift the head of the bone with his knee, while he guides the bone into the socket with his hands. Sometimes the body of the patient is simply held by an assistant while the operator extends the limb with his knee in the arm-pit for a fulcrum, lifts the shoulder bone into its place. In setting the shoulder the arm must be raised at right angles with the body. The operator may tie a towel about his neck after passing it under his arm and lift the head of the bone into its place by raising the neck. In extending the arm the force should be applied for three or four minutes in order to give the muscles and time to relax. When the head of the bone is thrown forward from the collar bone, or backwards upon the shoulder blade it is set in the same way. The body is to be confined in the same manner and the extension made in the same way. When the bone, however, is thrown down beneath the collar bone, the extension should be at first obliquely downwards and backwards until the bone has cleared all impediments. The arm should be carried in a sling to support the shoulder.

Dislocation of the Thigh or Hip Joint.—The thigh bone may be dislocated in four different directions: upwards, or upon the back of the haunch-bone; downwards or into the oval opening called the foramen ovale; backwards or into the ischiatic notch, and upwards, upon the shinbone. In most cases the head of the thigh bone is pushed from the socket upon the back of the haunch bone. The leg will be about two inches shorter than the other, and the knee and foot will be turned inwards. In setting the thigh bone the lower part of the trunk must be firmly fixed by girths, or it may be held by assistants. The patient must lie upon the back and a strong girt or bandage placed around the leg just above the knee to pull upon. Pulleys are used to make the extension by professed surgeons; but two or three strong persons are commonly able to draw the bone in to its place. The extension must be made for four or five minutes before the muscles will give way. The operator must guide the head of the bone and lift it over the edge of the socket. The patient can lie with a bed post placed between the thighs in the crotch and the limb reduced in this way. When the head of the thigh bone is thrown down into the foramen ovale, the leg is about two inches longer than the other and the head of the bones of thin people can be felt. The empty socket can also be felt. The extension is made in a similar way as in the first case and the bone is lifted into its place by the operator in very much the same way. The main thing with the operator is to ascertain where the head of the bone is, and where the socket is. If he perceives these two points clearly, there will be no difficulty in setting the bone. Dislocations in the two other directions are set in a similar way with those described.

Dislocations of the Wrist.—In dislocations of the wrist joint the head of one or both bones of the arm can commonly be felt. The bones of the arm are either pushed over the bones of the wrist or the bones of the wrist over the heads of the radius and ulna. To set the wrist joint the operator must grasp the patient's hand with his right hand and the arm with his left, and an assistant must hold fast the arm above the elbow. Both the operator and assistant must then pull gradually until the bones slip into their places. A roller should be applied round the arm and a flat piece of board applied to the back and fore part of the arm. The joint should be kept wet with vinegar or a solution of sal ammonia. The joints of the thumbs and fingers are set by simply making the necessary degree of extension.

HEMORRHAGE OR BLEEDING.

In speaking of wounds, reference has been made to their bleeding, but it is proper to speak of this topic more specifically, as well as hemorrhage of various portions of the body.

Bleeding is a constant accompaniment of accidental cuts and wounds. These sometimes bleed so profusely that serious results occur before professional aid can be had; hence it is highly important that people generally should possess a knowledge of the means required to stop excessive bleeding. The blood may issue from a cut or wound in two ways: it may be pumped out in jets of a bright red color, in which case one of the arteries which convey the blood from the heart to the surface is wounded; or it may flow out in a dark-colored continuous stream from the veins which return the blood from the limbs to the heart. It happens not infrequently, however, that the injury is a mixed one, and the blood, though principally from the veins, is mingled with blood poured out by arteries, too small to give their characteristic jet.

It will be seen that the most serious form of bleeding arises from the wound of an artery, and as the blood in this case is flowing from the heart to the circumference, the flow must be arrested between the trunk and the wound by compressing the artery; in the case of a wound or rupture of a large vein, the point of application of the pressure will be either upon or *below* the wound.

In the upper arm the location of the principal artery runs along the inner side of the limb, where its beating is easily felt. Thus in the case of arterial bleeding from the hand or arm, pressure against the artery can be efficiently obtained by tying a strong tape or handkerchief around the arm, and tightening it by twisting a stick in it on the outer side of the limb.

The main artery in the thigh runs down the middle of the front limb, and can be controlled in the same way as in the arm. The introduction of a wine cork, or a pad, beneath the handkerchief in the situation of the vessel will lead to more efficient pressure upon it, and without so much tightening of the bandage as would otherwise be necessary.

When there is profuse bleeding from the wrist or arm, let the arm be held up over the head; or, if in the leg, let the person lie down and support the foot on a chair.

If a person is alone in the field or woods, or in case of an accident from machinery or railway disaster, take a handful of dry earth, put it on the wound, and grasp it tightly till some assistance be procured.

Let it be remembered that in case of severe bleeding from a wound, where serious consequences may result before medical assistance can be procured, the first thing to be done is to get a *pressure* upon the wound or the artery leading to the heart. A bunch of grass, a stone, a handful of earth put into a handkerchief or a stocking, or a strip of cloth torn from the clothes, and tied very tightly around the limb or pressed upon the wound will arrest the bleeding, or lessen it, till medical assistance arrives.

This method is a rude substitute for a *tourniquet*, and is only for temporary use. When the bleeding is severe enough to require its use, a medical man or surgeon should be called; the bandage must not be interfered with before he arrives.

It happens frequently that children receive cuts or wounds which bleed profusely, yet the injury may be but light. Wash the injured part clean and apply whiting or pipe clay; put it on a thick covering, then apply a bit of dry lint, and press it closely for a few minutes. Let all that sticks to the wound stay, and cover with a piece of plaster.

A few words about bandages, employed in dressing wounds, are apposite here. A bandage or roller is simply a strip of calico, from two to three inches in width and usually five or six yards long. Soft unbleached calico or unbleached cambric is the best for this purpose, but any suitable material may be used in an emergency. For convenience in using, the bandage must be rolled from one or both ends. In domestic surgery the "single-headed roller," or that rolled from one end is only required.

Some persons bleed much more freely than others. Indeed, cases have occurred where a small cut or scratch has been sufficient to cause death from bleeding. There is, in such cases, a tendency to bleed; and the drawing of a tooth sometimes occasions such profuse bleeding as not only to be very annoying and attended with much inconvenience, but also causes much alarm. When cases of this kind are met with get some whiting or pipe clay, or powdered chalk, roll this up in a bit of lint, dip it in spirits of turpentine, and press it firmly into the hole from which the tooth was extracted. This will probably stop the bleeding in a short time. Let it remain in the jaw fifteen minutes, and if it does not stop the bleeding, change the plug for a fresh one; press it in steadily and let it stay for several hours. Do not pull it out, but wash the mouth out with cold water until the plug is loose.

Bleeding from the Nose.—As a general thing an attack of bleeding from the nose is not attended with danger. Very often it is a relief to headache and a fullness of blood vessels of the brain. Children and young persons are more subject to these attacks of bleeding than adults, although persons of a sanguine temperament are occasionally liable to them. The blood vessels of the lining of the nostrils are the tenderest and the most fragile of any in the body. Young persons, about pubescent age, are most liable to it, when the force of the circulation of the blood has become strong, and before the blood vessels have acquired that cohesiveness or toughness which enables them to resist the force of the moving blood. Where the bleeding becomes periodical and profuse, paleness of the skin, and weakness of the system follows, and sometimes there is a disposition to become dropsical. Where these symptoms occur, immediate steps should be taken to remedy the difficulty.

When the bleeding is but slight, it may prevent some more serious ailment. The application of cold water to the head and face, or to snuff up a little alum water or the fine powder of alum, or tanic acid. Sometimes a plug of dry linen lint will stop the blood where cold water and alum fail; but this is not advised, as unless it is properly done the blood finds its way to the top of the throat and is swallowed or ejected through the mouth. The person should keep still and avoid the fire until the bleeding has ceased. Raising the arms above the head, and keeping them above the head ten or fifteen minutes is nearly always effectual in stopping the bleeding, in ordinary cases. When the arms are raised the heart labors harder to propel the blood to the head, and the blood in the arteries leading to the head and nose is moved slower. In aggravated cases, bleeding at the arm has been found to stop the hemorrhage from the nose. Cooling medicines are generally used. Snuffing lead water—sugar of lead dissolved in cold water—up the nostrils has also been found useful as a styptic. A light vegetable diet is required in the severe form of this complaint. Stimulating food and drink, and violent exercise must be avoided. The tone of the digestive organs and debility of the system may be benefitted by iron in the form of muriate, or some other preparation.

Bleeding from the Lungs.—This is a serious complaint and must never be neglected. "It is" (says the author of "Popular Medicine,") "one of the most alarming incidents to which we are liable. It often occurs without any warning, and proceeds from no assignable cause. A slight tickling in the throat, a little cough, probably produced by the blood let loose from the air cells of the lungs, and a slight saltish taste in the mouth, are all the inconvenience commonly felt in spitting blood. In some cases there will be feverishness, headache, quick pulse alternate sensations of heat and cold, a sensible tightness in the chest, wakefulness, and a degree of restlessness, flushings of the neck and chest, and thirst."

The quantity of blood spit up, varies in amount. Sometimes a small quantity only is raised and at others large mouthfuls are spit up, the blood being frothy and of a light red color. It comes up by coughing. The authority quoted above, says further of this malady, "in bleeding from the lungs, the degree of danger is by no means in proportion to the quantity of blood coughed up at a time. Recovery takes place quite as well and as often where large quantities of blood have been raised, as where they have been small." Sometimes recovery of the patient takes place rapidly, while in other cases the disease proceeds on to ulceration and suppuration, ending in consumption.

The domestic remedies usually made use of in treating this disease are as follows: A teaspoonful of vinegar and one of paregoric in a little cold water, and repeat the dose every half hour. Sponge the chest with cold vinegar and water. The patient should be placed on a bed, with the head and shoulders raised on pillows. In this position the blood cannot issue so easily from the vessels of the lungs as when the patient lies down. He should not be allowed to talk, or to use exertion of any kind. Plenty of good, pure air is required and only a light covering. A dose of epsom salts should be given at once, or, in case this article is not at hand, a teaspoonful of common salt should be given. The efficacy of common salt has been questioned, but as it produces nausea, and a sense of cold in the stomach, it is at least as good as nauseating medicines in general. Relief has been obtained, and bleeding from the lungs stopped immediately, by administering a strong injection of epsom salts dissolved in warm water. Some medical authorities place very great value on this treatment. It is held that the course of the blood is changed much quicker in this way than any other. The practice of some physicians is, to give eight grains of nitre or saltpetre, in solution, every two hours; or two grains of ipecac, once in the same time, will answer a similar purpose. A mild nausea moderates the force of the circulation, and tends to check the flow of the blood. Lemonade, bayberry water, and tamarind water, cool the blood and obviate the tendency to febrile excitement. Cold water, to allay thirst, may be freely drank. A light vegtable diet should be strictly adhered to until all appearances of bleeding have ceased. The bleeding will often return every day, or every few days, for several weeks in succession. It commonly increases until it reaches a certain point, and then gradually decreases until a sound state of the lungs is regained.

Bleeding from the Stomach.—Bleeding from the stomach or vomiting blood is most generally caused by exposure to cold, which stops the perspiration, and getting the feet wet. Sometimes violent passions, injuries about the stomach, and corrosive substances taken inwardly will produce this disease. It is much more common among women than among men. It commences with pain and distress in the pit of the stomach, sickness, restlessness and weakness. It is sometimes called spasms in the stomach, and is probably better known by this name than by any other. Nausea and retching are almost constant. Clear blood will sometimes be thrown up, and at other times blood and the ordinary contents of the stomach. After a time the spasms cease, only, however, to return again and continue until the strength is exhausted. These attacks, unless checked by proper remedies, sometimes continue at intervals for several days. In most cases they are more alarming than dangerous, though death will sometimes ensue. It is rare that this malady occurs from ruptured blood-vessels in the stomach. Other organs and portions of the body are subject to hemorrhage, and it is reasonable to conclude that the exhalent vessels are deranged in the stomach as in other organs. It is probable that when bleeding of the stomach occurs in that part of the body it is in a condition similar to that of the lungs or nose when bleeding takes place in those organs.

The treatment recommended in this malady by the medical treatise heretofore mentioned is as follows: "When it proceeds from corrosive substances which have been swallowed, the first thing to be done is to remove or neutralize them by emetics and oils. In such cases an emetic of ipecac will be safe, and if that medicine be not at hand, a table-spoonful of powdered alum will be equally proper. After the operation of the emetic, a dose of castor oil will be necessary as a purgative to clear the bowels. Cold water and sour drinks will be proper, and also bathing the feet in warm water. Mustard poultices should be applied to the feet, and cloths wet in cold water, to the stomach. But where the spasmodic pains are severe, and the vomiting of blood frequent, the remedy which will be found to succeed the oftenest is a teaspoonful of laudanum and a teaspoonful of ether mixed together and swallowed in a little water. If the first dose does not allay the vomiting of blood and the spasms, it may be repeated at the end of one hour, and if the second dose does not succeed, it may be repeated the third time, at the end of three hours more. In moderate cases, a piece of flannel wetted with a couple of teaspoonsful of laudanum and laid upon the stomach will generally afford relief."

Bleeding from the Bowels.—This is of not unfrequent occurrence, even when dysentery or bleeding piles are not present. Usually there is little or no pain. Generally it is caused by taking stimulants constantly, which produces excessive irritation of the bowels. It is among intemperate persons that this ailment is usually found. It is usually attended with loss of strength, paleness, and fainting.

One of the first requirements in this disease is perfect quiet Alum water mixed with a teaspoonful of laudanum, used as an injection, should be given, and a dose of castor oil swallowed immediately after it. The drink should be lemonade, or cold water, and the diet consist of gruel, toast water, and barley water.

Bleeding from the Bladder and Kidneys.—This usually arises from irritation of the bladder and kidneys by the pressure of gravel stones. Sometimes violent exercise, or injury to the abdomen and back will produce it. It is usually attended with acute, excruciating pain in the small of the back, difficulty in voiding water, sometimes sickness at the stomach, and vomiting. If the blood comes from the bladder there will be a sense of heat and pain at the lower part of the abdomen, near the rectum. If purulent matter is discharged with blood, the complaint is attended with danger.

Menorrhagia.—In cases of menorrhagia, or bleeding from the womb, recourse should be had at once to a physician. It is a delicate and dangerous disease, which at once calls for medical advice.

BURNS AND SCALDS.

Accidents coming under this head seem to have increased in frequency of late years. Many of them result from the use of kerosene for illuminating purposes. Fearful burning, resulting oftentimes in death, are of frequent occurrence. Railway accidents, too, are not unfrequent in which engineers and firemen are badly scalded, and passengers badly burned. These, together with the casualities resulting from the love of playing with fire common to children, and from other causes, make up a frightful total every year.

Carelessness in filling and trimming lamps, and in lighting fires with kerosene occasions the largest number of these accidents. In most of these cases the clothes of the person—almost always a woman—take fire; she is enveloped in flames. Her hair is soon on fire; she is suffocated, and rushes frantically about, crazed with pain and utterly confused. This is just what should not be done, for rapid movements produce a current of air which increases the flames. Under such an alarming state of things the person whose clothes are on fire is hardly to be expected to retain their presence of mind, although there is the strongest need of it. The thing to do is to smother the flames, and this may be done by seizing a blanket or bed-quilt, counterpane, or piece of carpet, wrapping it tightly around the person and rolling upon the floor. Remember this. Then get plenty of water and saturate the burning clothing thoroughly. Next place the patient in a warm room, lay her on the floor upon blankets or a bed quilt—*not on the bed*—and give warm stimulating drinks.

With reference to removing the clothing, Dr. Hope says:—"Perhaps in the whole course of accidents there is not one which requires so much care and gentleness as this. We want only three people in the room—one on each side of the patient and one to wait upon them. Oh, for a good pair of scissors or a really sharp knife! What misery you will inflict upon the sufferer by sawing through strings etc., with a rough-edged, blunt knife! There must be no dragging or pulling off; do not let the hope of saving anything influence you. Let everything be so completely cut loose that it will fall off; but if any part stick to the body, let it remain; and be careful not to burst any blisters."

In the first stage of burns or scalds the treatment consists in excluding the air and applying cloths wet with linseed oil and lime-water. Open your medicine chest and wet a piece of old linen or calico with the linseed oil and lime-water, and apply it as soon as the injured part is exposed. Cover it with a dry piece of flannel and secure it with a bandage. If the oil and lime-water mixture is not ready, use a pint of hot water and milk, equal parts, into which put a teaspoonful of carbonate of soda. If the milk is not at hand, take a liberal quantity of common soap and warm water; keep the injured parts thoroughly wet and well covered. When the clothing is all removed, and the injured parts are dressed, lift the patient gently into bed and cover her up warmly.

In severe cases, where the place scalded or burned is large and deep, and the skin blistered or peeled off, the best thing which can be done is, immediately, or as soon as may be, to cover the burn with a soft bread poultice, made simply of white bread and warm water. The poultice should be blood warm, perfectly soft, and renewed as often as it grows at all hard. It must be frequently renewed, as its efficiency depends mainly on this. With many physicians this is the remedy *par excellent* in burns and scalds. Its solvent power is very great. It should be made without milk, oil or other greasy substance, for these spread over a poultice, operate like oil or grease applied alone; they choke up the exhalent vessels and confine the heat.

It is advisable in most cases of deep burns or scalds to give opiates. A dose of laudanum or morphine should be given once in six or eight hours. When a child has fallen into the fire, or been scalded with boiling water, or burned by its clothes taking fire, as soon as the burning substances have been removed from its body, a dose of laudanum, paregoric or morphine should be the first thing given. In all cases the patient must be kept comfortably warm, and no more. Cool drinks and a light diet are necessary, and the bowels kept open by castor oil, salts, or some mild physic.

Some of the remedies in use are linseed oil and cotton, or sweet oil and cotton. Turpentine, alcohol and new rum are also recommended by some physicians, but are not generally used. It is the opinion of some that all local applications should be cold; but unless the burn be superficial, cold water can be of no use in restoring the part to its natural state.

Usually, in the case of a burn, the flesh begins to suppurate in two or three days, throwing off freely a yellowish matter. The healing process commences by the formation of small granulations A salve made of beeswax and sweet oil will promote healing.

In cases of severe burns, it sometimes happens that inflammation becomes very great in two or three days, the pulse forcible, and the heat of the system much increased. Medicines should be given to induce moisture of the skin. Antimonial powder, ipecac, or sal nitre should be given until moisture is thus excited upon the skin, and the pulse reduced. Acidulated drinks should be given, and the patient kept upon a liquid or vegetable diet.

Where the whole system appears to be overcome by the shock occasioned by a burn, (as sometimes occurs,) first give an opiate, and subsequently administer wine, camphor, ether, and other carminatives and stimulants, and repeat until the vital powers have rallied.

Adhesive plasters are of much benefit in deep burns by assisting to close the wound. Draw the surrounding skin and flesh together as near as may be, and keep them in this position until the new skin is formed.

When the fingers or toes are burned, separate them by a piece of linen cloth, spread with simple cerate—an ointment of wax and oil—to prevent them from uniting and growing together. The same course should be pursued in case of the eyelids and nostrils.

SUSPENDED ANIMATION.

There are various forms of suspended animation. It includes all those cases of apparent death in which the patient may be restored to vitality and health by the use of appropriate remedies. Thus we have fainting and drowning, also apparent death from hanging, foul gases and poisons, including intoxicating liquors.

Fainting, or syncope, is the simplest form of suspended animation. It frequently arises from the effects of heat or over-exertion, tight lacing, loss of blood or other depletion. It occurs, also, in many instances, from an affection of the nervous system; in others it is owing to some organic or functional disease of the heart. When patients have become weakened by disease, fainting takes place very easily. Some persons faint from the effects of violent passion, or emotions of the mind. Religious excitement often produces fainting, (which ignorant persons sometimes absurdly attribute to direct mantion of the spleen by a sudden transference of a large quantity of blood from the arterial to the veinous system is the cause of this affection from the arterial to the verious system is the cause of this affection in people who faint from the effects of passions and emotions of the mind, or from sensations of the body, or who are in the habit of fainting from slight causes. The spleen and its blood-vessels are often greatly enlarged, and must exercise no inconsiderable agency in the animal economy.

Generally cold water dashed upon the face has the effect of restoring the powers of life. The patient should have access to fresh air and be placed in a recumbent position so the flow of the blood to the head may be accelerated. If there be any tightness of dress it should be remedied. Gentle rubbing should be employed; the use of smelling salts is often of service in rousing a patient; a little wine or some other stimulant may be taken as soon as the ability to swallow returns. If the stomach is oppressed with food or any nauseating substance, an emetic should be given. In case fainting results from other disorders and affections the remedies must be adapted to cure the primary diseases.

Drowning.—Many lives are lost from this cause which could be saved, if persons who are present, at the time of the accident, knew what to do. Every moment is of importance in these cases of suspended animation, and efforts at resuscitation should, therefore, begin as soon as the patient is drawn from the water, and before conveying him to a house. But medical assistance should be sent for, and blankets and dry clothing procured as soon as possible. In the meantime proceed to treat the patient, securing as much fresh air as possible.

Some years ago the Royal Humane Society of London, had prepared by Dr. Sylvester and Dr. Marshall Hall, the following directions as to what should be done for people who seemed to be dead from drowning or suffocation.

The points to be aimed at are: first, and immediately, the restoration of breathing; and secondly, after breathing is restored, the promotion of warmth and circulation. The efforts to restore life must be persevered in unremittingly until the arrival of medical assistance, or until the pulse and breathing have ceased for at least an hour.

It is commonly believed that in the case of drowned persons the lungs are full of water. It is seldom that much water ever enters the lungs unless the person is entirely dead. The contact of the water closes the epiglottis and prevents both water and air from entering the windpipe. Thus it will be seen that rolling a patient apparently drowned on a barrel or suspending him by the feet to expel water from the lungs is not only useless but very improper.

The treatment recommended by doctors Sylvester and Hall, is as follows:

Treatment to Restore Natural Breathing:—To maintain a free entrance of air into the windpipe, first cleanse the mouth and nostrils. This is best done by placing the patient gently face downwards for a moment with one of his wrists under his forehead. This allows any fluid to escape from the mouth and throat and the tongue to fall forward; then draw forth the patient's tongue and keep it forward; an elastic band over the tongue and under the chin will answer this purpose. Remove all tight clothing from about the neck and chest.

To Adjust the patient's position.—Place the patient on his back with the head and shoulders slightly raised and supported on a small firm cushion, such as a folded coat. The next thing to do is to imitate the movements of breathing. Grasp the patient's arm just above the elbows, and draw the arms gently and steadily upwards, until they meet above the head. (The object of this is to draw air into the lungs); and keep the arms in that position for two seconds. Then turn down the patients's arms and press them gently and firmly for two seconds against the sides of the chest. This is for the purpose of pressing air from the lungs · and this is aided by pressure upon the breast-bone.

Repeat these movements alternately, deliberately, and perseveringly, fifteen times in a minute, until a spontaneous effort to breathe is perceived, immediately upon which, cease to imitate the movements of breathing, and proceed to induce circulation and warmth.

Should a warm bath be procurable, the body may be placed in it up to the neck, continuing to imitate the movements of breathing. Raise the body in twenty seconds in a sitting position and dash cold water against the chest and face, and pass ammonia under the nose. The patient should not be kept in the warm bath longer than five or six minutes.

To Excite Inspiration.—During the employment of the method, excite the nostrils with snuff or smelling salts, or tickle the throat with a feather. Rub the chest and face briskly and dash hot and cold water alternately on them.

Treatment after Natural Breathing has been Restored.—To produce circulation and warmth wrap the patient in dry blankets and commence rubbing the limbs upwards, firmly and energetically. The friction must be continued under the blankets or over the dry clothing.

Promote the warmth of the body by the application of hot flannels, bottles or bladders of hot water, heated bricks, etc., to the pit of the stomach, the arm-pits, between the thighs, and to the soles of the feet. Warm clothing may generally be obtained from by-standers if they cannot be otherwise readily procured.

On the restoration of life, when the power of swallowing has returned, a teaspoonful of warm water, small quantities of wine, warm brandy and water or coffee, should be given. The patient should be kept in bed, and a disposition to sleep encouraged. During reaction large mustard plasters to the chest and below the shoulders will greatly relieve the distressed breathing. Great care is requisite to maintain the restored vital action, and at the same time to prevent undue excitement. Persevere for at least three or four hours.

Do not be discouraged if you do not produce any good effect at once, but persevere. There have been cases of recovery after suspended animation of five hours. You will feel it a glorious reward when you see the dead restored to life through your exertions.

Hanging.—Death from hanging with suicidal intention occasionally occurs. Frequently, however, the would-be suicide is discovered before the vital spark is extinguished; and such cases of suspended animation require treatment very similar to that recommended for drowned cases. The first step is to cut the sufferer down and loose the ligature round the neck. Cold water should then be dashed over the head and chest and if no breathing is thereby excited, recourse should be had to artificial respiration. It may be necessary to bleed the patient from the jugular vein or femoral artery in order to relieve the congestion of the head; but neither of these [illegible] undertaken except by a medical man.

[illegible] animation from foul gases is most com- [illegible] country, in wells where carbonic acid gas col- [illegible] to any workman descending to repair pump [illegible] accidents several lives are often unnecessarily [illegible] eant but ignorant efforts made to rescue the [illegible] not be out of place to say a few words," says [illegible] to the best method of dispersing the noxious gases, and removing those who are suffering from their influence. When one man has fallen insensible under the influence of carbonic acid, it is simply suicide for another to attempt to rescue him without proper precautions. These consist in having a strong rope securely fastened round his waist so that he may be drawn up at once, if overcome, and another similar rope to be carried in the hand to be attached to the first victim. The mouth and nose should be thoroughly muffled with a woolen comforter or handkerchief, and the rescuer should breathe as seldom as he can while attaching the rope to his fallen comrade. If sufficient assistance is at hand, efforts should at the same time be made to disperse the carbonic acid gas by throwing down buckets of water. By this means the ordinary atmosphere air will be, to a certain degree, mixed with the deleterious vapor. These foul gases are frequently met with in connection with breweries where the carbonic acid gas is apt to collect in large vats used for brewing. The same course is to be pursued in the one case as in the other to rescue a sufferer. When water is thrown down into such vats and the atmospheric air becomes mixed with the dangerous vapor its weight causes it to speedily find its way through an opening in the bottom of a vat, if such can be rapidly made by opening a trap or cutting out a plank. A garden engine and hose, if at hand, may be used to pump fresh air to the sufferers, and a fire engine, if obtainable, would be a still more efficient instrument. When the sufferer is at last placed in safety, every effort must be made to establish respiration in the manner explained in the case of drowning. It is most important that free access of fresh air should be allowed to him by avoiding all crowding of anxious relations and friends around the patient."

Sunstroke.—During the summer months, insensibility from sunstroke is of not unfrequent occurrence. It is brought on by continued exposure to the hot rays of the sun. The patient complains of violent pain in the head, and in severe cases rapidly becomes insensible, the face being flushed and the head hot, the breathing labored and snoring, and the extremities cold.

The patient should be removed into the shade, and cold water applied freely to the head and nape of the neck. The head should be supported, and cold water (iced, if possible), poured from a height upon it. At the same time mustard poultices may be applied to the calves of the legs and the soles of the feet. Do not neglect to send for a physician at the outset.

Insensibility from *Intoxication* or Poisoning frequently occurs. The first thing to be done is to send for the doctor. All constriction about the neck and chest should be removed, and the patient placed on his side with the head slightly raised. If vomiting can be induced, no harm can be done. This is most readily accomplished by tickling the interior of the throat with a feather, if the sufferer is not able to swallow; or if he can swallow, administer an emetic of warm mustard and water.

POISONS AND POISINING.

Some poisons produce irritating or corrosive effects, some narcotic, (producing stupor, coma, and convulsions), and some putrescent, or producing putrefaction. Animal poisons are called venoms when resulting from various reptiles, or spiders; and virus, or the poisonous matter produced by disease, as in the case of small-pox, or the peculiar disease generated by the bite of a rabid animal. The number of poisonous substances in both the vegetable and mineral kingdoms is very large. Herein, without regard to classification, it is the purpose in this portion of THE HOME GUIDE to briefly set forth a few rules or principles applicable to the treatment of poisons generally, and then point out those in commmon use from which accidents occur.

A great many poisonous substances are in daily use among manufacturers, farmers, and persons engaged in commercial pursuits, as well as in the household, hence mistakes are liable to occur, and often do occur. Then, too, persons laboring under mental depression, or an aberration of mind, attempt to put an end to their existence by swallowing some deadly potion. It is very useful, therefore, to have a guide to which we may refer in order to neutralize the effects of poison by administering a timely antidote. Let it be borne in mind that in almost every case of poisoning the remedy must be given immediately if any good is expected to result.

In the treatment of poisons taken into the stomach, three things are necessary. First, to remove the poisonous substance, or as much of it as is practicable, from the stomach. Second, to neutralize and prevent the injurious effects of what remains in the stomach; and third, to obviate the injury which may have already been inflicted upon any particular organ, or upon the whole system. The removal of a poisonous substance from the stomach is done by giving prompt and powerful emetics, or by the stomach pump. Those emetics which act the quickest are, as a rule, the best; but those should be avoided which themselves produce poisonous effects if not ejected. One of the simplest emetics is mustard and warm water;—a teaspoonful of the former to a tumbler-full of the latter is the usual quantity given. Two or three tea-poonsfuls of powdered alum in a tumbler full of warm water will also produce vomiting in most cases. But among the best emetics are ipecac, tartar emetic, white vitriol, blue vitriol, lobelia, and thoroughwort. The two last named, being slower and less certain in their action, should be used only in case no other is at hand. Ipecac. should always be preferred, because it is more certain.

When an emetic is not at hand, vomiting may usually be produced by passing the finger or some irritating substance down the throat. Half a pint of a moderately strong solution of saleratus, followed by as much good vinegar, has been known to produce violent vomiting; in case of poisoning by opium or other narcotic, this should be tried. In case the patient cannot swallow, or refuses to do so, or if no emetic is at hand, the stomach-pump is the only resource. With this instrument the stomach may be emptied of its contents, and medicine introduced which the case may require, and pumped out again if necessary.

The second mode of treating these cases—poison taken inwardly—is by the employment of substances or antidotes which are known to neutralize particular poisons, and thereby render them harmless or inert; or, if no substance is known to neutralize a particular poison, then to employ such substances as will unite with it, and thus shield the stomach from its deleterious action.

Acids are neutralized by alkalies, and alkalies by acids. Magnesia, saleratus, pearlashes, ley, the super-carbonate of soda, lime, chalk, and ammonia are neutralizers of acids; vinegar, lemon juice, etc., are neutralizers of alkalies. Acrid or corrosive poisons, as arsenic, corrosive sublimate and blue vitriol are rendered less active, and their injurious effects in some degree prevented by albuminous, oily, and sweet, mucilaginous drinks. The whites of eggs, milk, the mucilages of slippery-elm, flax-seed, Irish moss, and sugar and water are all appropriate in the treatment of corrosive poisons.

When poison has produced effects upon any organ, or affected the whole system, the treatment will depend upon its nature. "If inflammation and fever have been induced," says one prominent author, "leeching, blistering, cold applications, cooling cathartics and antimony may be indicated; if narcotism, stupor, or insensibility, use cold applications to the head, stimulants to the extremities, blisters, frictions, internal excitants, strong coffee, vinegar and water; if debility or great prostration, wine, ammonia, quinine, and nutritious liquids."

These general observations will be found applicable in a majority of cases; and their application will, as a rule, be found effective, provided the patient is not beyond the reach of cure. But it is well to point out some of the most common poisons, and indicate the specifics or antidotes, when known, which may be given.

Arsenic.—There is no substance, vegetable, mineral, or animal, from which so many cases of poisoning occur as from arsenic. It is a corrosive poison, very deadly in its character. The reason of its being so often selected by persons as a means of self-destruction is, no doubt, owing to its potency in producing death; but this is accompanied with the most intense and excruciating pain. The symptoms are, violent burning pain in the stomach and bowels, dryness and tightness of the throat, unquenchable thirst, retching, vomiting of billious and bloody matter, hoarseness and difficulty of speech, convulsions, cramps, death-like countenance, sparkling eyes and delirium.

The domestic remedies are, milk and raw eggs given in large quantities, lime water, or flour and water, to be followed by castor oil. Large doses of magnesia, chalk and water, and charcoal, are remedies that are used. Among antidotes for arsenic, also, are the hydrated per oxide of iron, and the precipitated carbonate and prepared red rust of iron. The first is preferable. It is in doses of half a drachm to a drachm, every ten minutes, diffused in water, until relief is obtained. There are a number of preparations of arsenic, such as cobalt, fly-powder, and solutions containing this drug, which, in case of poisoning by their use, separately, require distinct treatment. If arnica solutions have been swallowed instead of the white powder, copious draughts of lime water may lessen its potency. If cobalt, or other dry preparations of the drug have been taken, or even white arsenic, and vomiting has not commenced, a strong emetic should be given at once. Pains and cramps may be relieved by counter-irritation with mustard poultices, blisters and mucilaginous drinks. In case of inflammation, the case must be treated upon the general principles heretofore given.

Antimony.—Cases of poisoning with antimony are rare; nevertheless, poison from some of the prepartions of this substance, when taken in large doses, does sometimes occur. The symptoms are, vomiting, pain in the stomach, cramps, purging and faintness. Give strong tea copiously; or an infusion of oak, elm, currant, or blackberry bark or leaves.

Acids.—Oxalic, sulphuric (oil of vitriol), nitric (aqua fortis), muriatic (spirit of salt). [Prussic acid not included.] These are all corrosive poisons when swallowed in their concentrated forms, acting as powerful caustics on the parts with which they come in contact. Nitric acid turns the skin yellow, and sulphuric makes it black. The symptoms are, horrible burning and soreness in the mouth, acrid taste, intolerable pains in the stomach, purging of blood great thirst, convulsions. Remedies:—Put an ounce of calcined magnesia into a pint of water, and give a wine-glass full every two or three minutes. If the magnesia is not at hand, substitute whiting, chalk, soda, or lime water.—When the oil of vitriol (sulphuric acid) has been taken, water must not be drank, on account of the great heat which is produced by mixing them. Ammonia is an antidote to the acids, but it must be largely diluted with water.

Alcohol.—The symptoms and effects of this poison are too generally known to need description. An effective emetic, stimulating injections, cold applications to the head, and if the head be very much oppressed, taking blood from the jugular vein, are the best remedies.

Ammonia.—Preparations of ammonia, (hartshorn), potashes, and pearlashes, produce symptoms similar to other irritating poisons. Their action is counteracted by vinegar, lemon-juice, the citric and tartaric acids.

Corrosive Sublimate.—This is a preparation of mercury, as is red precipitate, vermillion, calomel, etc. The same treatment applies to all forms of mercury. When taken into the stomach in over-doses they are active corrosive poisons. The symptoms are a harsh astringent metallic taste in the mouth, a tightness and burning sensation in the throat, burning pain in the stomach and bowels, vomiting, purging of bloody matter, drowsiness, stupor, convulsions. The best remedies known are the whites of eggs, beaten up with milk or water, and wheat flour and water, then linseed tea.

Copper.—Cases of poisoning by blue copperas, blue verditu, mineral green, verdigris, food or confectionery cooked in foul copper vessels, pickles made green by copper, etc., are quite common. The symptoms are, a coppery taste in the mouth, tongue dry and parched, very painful colic, bloody motions. Treatment:—Large quantities of milk and eggs; afterwards strong tea. Do not give vinegar.

Chloride of Tin.—Dyers call it muriate. The symptoms are, vomiting, purging, convulsive twitchings. Remedies: Large quantities of milk, with magnesia, chalk, or whiting in it; also raw eggs beaten up with water or milk.

Chloride of Zinc.—Burnet's disinfecting fluid, white vitriol.—The symptoms are similar to those produced by chloride of tin, and the same treatment is to be followed.

Carbonate of Barytes and *Lime* are neutralized by sulphate of soda, glauber salts, and epsom salts. Lime is neutralized by the acids.

Stale Fish, Mussels, etc.—Symptoms, pain in the stomach, flushed face, headache, feeling of choking. The treatment is, empty the stomach by an emetic, then give a full dose of castor oil, with some warm spice. Apply a mustard plaster to the pit of the stomach.

Cantharides, (the Spanish potato fly.)—When taken into the stomach, these are very poisonous. They cause an offensive breath, acrid taste, great heat in the throat, stomach and abdomen, pain in the stomach, vomiting, bloody motions, retention of urine, convulsions, delirium, death. Large draughts of sweet oil, sugar and water, flaxseed tea, and milk, are advised. Inflammation of the internal organs is to be subdued by leeching, and a liniment of camphor and sweet oil.

Green Vitriol—Sulphate of Iron.—This poison causes pain, sickness, burning heat at the stomach. Give an emetic, then magnesia or carbonate of soda and water.

Iodine—Iodide of potassium or soda.—Causes burning pain in the throat, heartburn, vomiting, sometimes salivation. Give large quantities of cold starch and water, or flour and water.

Laudanum.—(See opium.)

Lead—Acetate, or sugar of lead, red lead, white lead.—The symptoms of lead poisoning are, a metallic taste in the mouth, pain in the stomach, painful vomiting, often bloody, hiccough. Remedy: Put two ounces of Epsom salts into a pint of water, and give a wine-glass full every ten minutes, till it operates freely. Taken in small quantities, either by drinking water out of new leaden pipes or cisterns, or one newly repaired with white lead, or by working amongst it; lead produces colic, loss of power in the limbs, and a blue line among the gums.

Lunar Caustic—Nitrate of silver.—Very often this substance, when used for touching a sore throat, etc., is swallowed by accident. It produces burning pain, similar to arsenic. Remedy: Give a large teaspoonful of common salt in a glass of water, and repeat this in ten minutes; then a dose of castor oil, and linseed tea or barley water for a drink.

Nitre, or Saltpetre.—The symptoms resulting from poisoning by this substance are similar to those produced by arsenic. Give plenty of flour-and-water, followed by linseed or sweet oil.

Opium.—Of this drug, and the treatment to be pursued in cases of poisoning by it, a standard medical authority says: "Opium, though incontestibly one of the most valuable remedial agents ever used, when judicously employed, is nevertheless a powerful narcotic poison, producing certain death when taken in large quantities. The manner in which it acts is peculiar and not well understood, as it leaves no traces upon the system sufficient to reveal its mode of operation. The symptoms of an over-dose of opium resemble those of an apoplectic fit. The breathing is slow, frequently interrupted, and sterterous; a dark suffusion often comes over the countenance, passes off, and returns again and again; the pulse is full, strong and slow; there is an irresistible disposition to sleep; the intellect is confused, or there is complete insensibility; the sleep continues profound; the skin at length becomes cool and clammy, the extremities cold, the pulse feeble and thread-like, the countenance deathly, the interruptions in the breathing more frequent and longer; there is torper and insensibility, from which the patient cannot be aroused. The length of time before death ensues varies in different cases from one to ten or twelve hours; from four to six is the most common. In cases of poisoning by this drug, the most powerful emetics must be resorted to. The white vitriol, ipecac, tartar emetic, blue vitriol, alum, saleratus, and vinegar, and tickling fauces, are among the remedies to be essayed. The stomach-pump is peculiarly useful, and should be used as early as possible before the opium has produced its full effects upon the system. Bleeding and leeching are sometimes necessary. Dashing the head and shoulders with cold water, friction, keeping the patient in motion, and stimulants to the extremities, and injections should be tried. If these fail, and the patient appear to be near dying, the breathing having nearly ceased, artificial respiration should receive a trial, by alternately inflating and exhausting the lungs, until the medicine has expended its force and the powers of life rally. * * When the system is somewhat relieved from the narcotic effects, the strength must be supported, and stimulants may be required. Some of the best stimulants are ammonia, strong coffee, and vinegar. We should never despair of success as long as the heart beats, for recoveries sometimes take place under what appear to be the most desperate circumstances."

The treatment recommended for opium is equally good for cases of poisoning by morphine and the various preparations of that drug.

Other Narcotic Poisons.—Belladonna, Cicuta, Henbane, Hemlock, and Stramonium, serve as examples of the narcotic poisons generally. The symptoms are alike so far as is known, and the same treatment is to be employed. When taken into the system in too large doses, these substances produce the following effects: Heaviness in the head, intoxication, numbness, sickness and sometimes vomiting, stupidity, dryness in the throat, delirium, convulsion, palsy. The pulse is variable, but commonly full and strong, the pupils very much dilated, the breathing hurried. These cases are to be managed much as in the manner described for cases of poisoning with opium. On no account permit vegetable acids to be taken into the stomach until that organ is thoroughly evacuated. When that is accomplished strong coffee and vinegar in a measure counteract the effects upon the system.

Poisonous Plants, Etc.—Children are sometimes poisoned by eating false mushrooms, poisonous berries, seeds, etc. Empty the stomach by any emetic which is at hand, as warm water, mustard, salt, or soap, warm chamomile tea, etc. It may be well to give a dose of castor oil, or olive oil. In case the patient be faint or sinking, give stimulants.

Poisoning the Skin.—When the skin is poisoned with dogwood, swamp sumach, or common parsnip, the affection nearly resembles erysipelas, and requires nearly the same treatment. A favorite remedy with many, is the witch hazel applied as a wash in the form of a decoction. The remedies usually applied are a solution of sugar of lead, and cooling cathartics.

Phosphorus: Lucifer Matches.—The symptoms of poisoning with this substance are great excitement of the whole system; and in other particulars, similar to arsenical poisoning. Give large quantities of warm water with magnesia, chalk, or whiting, or even flour stirred in it; encourage vomiting, but do not give oils, fats or milk.

Potash.—Under this head various articles are enumerated, as soda, ammonia, sal volatile, salt cake, disinfecting fluids of concentrated solutions of soda or potash. The symptoms are heat, pain in the stomach, vomiting and purging. Remedies: vinegar-and-water, oranges, lemons, sour beer, cider or sour fruit; to be followed by olive, linseed or any wholesome oil.

Prussic Acid.— Oil of bitter almonds, laurel water, cyonide of potassium, etc., contain prussic acid. It is a deadly poison, and if a large quantity is taken, death takes place instantly, but smaller quantities occasion giddiness, loss of sight and fainting. Prussic acid, is the most deadly poison known. One drop of pure acid would probably cause instantaneous death. When not instantly fatal, this poison occasions a sudden loss of sense, locked jaw, and difficult and rattling respiration, coldness of the extremities, small pulse, dilation of the pupils, and convulsions. There is a smell of bitter almonds proceeding from the mouth, and in the contents of the stomach, which may aid in forming an opinion of the nature of the case. Diluted water of ammonia is considered the best counter poison which can be used against this acid, otherwise its effects are to be combatted according to the general principles heretofore laid down.

Strychnine.— The symptoms of poisoning with strychnine are twitching of the muscles, locked jaw, convulsions; the body is bent backwards so as to rest upon the head and feet only. The stomach should be emptied by an emetic, then give linseed tea, or barley water, and to an adult thirty drops of laudanum occasionally to relieve the spasms.

Venomous Bites.— The bite of venomous serpents is followed by pain in the wounded part which extends over the limb or body. There is a hard swelling which is pale at first, but soon becomes red, livid and gangreneous. Fainting, vomiting, small, irregular pulse, convulsions, difficult breathing, failure of the sight and intellect, and cold sweat succeed. Inflammation, extensive suppuration and gangrene in the wound often precede death. When a person is bitten by a venomous serpent perhaps the surest way to prevent its effects in the system is to cut out a portion of the skin and flesh around the bite and then to promote the bleeding, wash it in brook or warm water if at hand. Another way of treating the wound is to wash it and apply a cupping glass over it to promote bleeding and extract the poison. Any glass or other small vessel from which the air is exhausted by a burning taper, will answer in the place of the cupping glass. Powerful caustics are sometimes used upon the wound to produce the death and sloughing of the poisoned portion around it. A rod of iron heated to a white heat, and applied to the wound, would be the readiest and surest method of producing a slough. If nothing better can be done under the circumstances, a ligature may be applied around the limb to stop the circulation, the wound be enlarged and washed for a long time in cold water. Sucking the wound is recommended by some, and has been practiced with success. If there be no abrasion or raw surface in the mouth and due caution be used, this undoubtedly is a safe and efficient practice. Within a few years past the spirits of hartshorn has been somewhat extensively used as an antidote to the poison of the rattle-snake. It is applied to the wound and taken internally. Cases have been reported in which it was given with success when the system was under the full influence of the venom. Many who are acquainted with the virtues of this medicine and are exposed to these reptiles, are in the habit of always carrying it with them. It is probably better entitled to confidence than any other remedy at present known. * * * Inflammation, fever, debility, etc., arising from these bites must be treated upon the general principles of treating these affections. Arsenic has been highly recommended as an antidote, and a number of indigenous plants have been much used, but of their merits we cannot speak advisedly. In case of a rattlesnake bite, the person must be given freely of whisky or other alchoholic stimulant.

Rabid Animal Bite: Hydrophobia. — Tie a string tightly over the part, cut out the bite and cauterize the wound with a red hot poker or lunar caustic; then apply a piece of spongio-piline, give a purgative and plenty of warm drink. Whenever chloroform can be procured, sprinkle a few drops upon a handkerchief, and apply to the nose and mouth of the patient before cauterizing the wound. When the breathing appears difficult, cease the application of chloroform. In using lunar caustic (nitrate of silver), rub it well into the very bottom of the wound, or take a very small poker, or much better, a steel used for sharpening knives, make the point of this quite red hot, to a white heat if you can, and press this for a moment into the wound. This is not such a dreadful operation as it seems to be; if the steel or whatever article you use is really hot enough, one moments' application is sufficient and gives scarcely any pain at the time.

FEVERS.

The most uniform and general symptoms of fever are, an increase of heat, a quickened pulse, a furred tongue, a depression of strength, and a peculiar affection of the stomach. The most common are fever and ague, intermittent fever, billious and remittent fever, continued fever, typhus fever, typhoid fever, lung fever, scarlet fever, etc.

One of the first things to be recollected and observed in nursing a case of fever is good ventilation. The value and necessity of good ventilation in dwellings have been considered in a former portion of THE HOME GUIDE. In the case of fever patients this matter is of special importance. The atmosphere of the room should frequently be changed; the vitiated air replaced by fresh, not only that the patient may have the best possible chance of recovery, but for the benefit, the comfort and health of those whose province it is to give him or her their attention. The following observations of Dr. Hope, upon taking care of fever patients, are apposite here: "Let the patient's hair be cut short, to enable you to attend to it properly, and it will also tend to keep the head of the sufferer cool and comfortable. When a person is delirious with fever, the dreams and fancies are almost always of a painful nature, the countenance showing plainly that the mind is troubled. There is a sense of fear, a dread of something which he may not have the power to explain to you. Try in every way to gain his confidence; listen patiently to his complaints, however ridiculous they may appear to you; do not contradict, or tease him with argument. Remember, 'dreams to the dreamer are realities,' and these things terrify him as if they were actually in the room. It is very common for some part of the furniture to take frightful shapes in the eyes of a fever patient. Perhaps he may be able to tell you what it is, but if not, by carefully watching the eyes, you will find him looking steadily at one object, and then turn away suddenly as if he were trying to escape. When these visions are troubling the patient, the best plan, if you can do so, is to remove him into another room. The effect is wonderful. The visions disappear, the dreadful forms are all gone, and the bright and cheerful face tells you better than words what a relief he feels. If you cannot change the room, change the furniture, and if that cannot be done, alter its position.

"A singular, and yet not uncommon, thing in fever with delirium is a strong dislike taken by a patient to a particular person, and this generally not a stranger, but a near relative, one who is greatly beloved by him when in health, and who has, for days and nights, been watching over him. In some cases this feeling of dislike grows into a hatred so deep that it is not safe to allow the person to remain long in the room. This is very distressing; it appears so ungrateful, such a poor return for all the care and kindness bestowed upon him, so unnatural that it is hard to bear. But it should be remembered that it is unnatural; it is the result of disease, and has no more to do with a patient's real affection than taking a dislike to some particular article of food. As the mind becomes healthy this will pass off; but it is very desirable that the person to whom the dislike is taken should be removed as soon as possible, and not again enter the room till the mind is in a healthier state, or the feeling may become so fixed that it will require a long time to subdue it.

"During the great thirst of fever you will frequently find that the patient, particularly a child, will prefer pure water to any other drink; but if you require a change, apple tea is cheap and refreshing. Peel the apples and cut them in very thin slices into a jug with some clean sugar, fill up with boiling water and let stand till quite cold. The quantity cannot be fixed, as that must depend upon the quality of the fruit. Another pleasant drink is made of the juice of three or four oranges and one lemon in a quart of water, with a little sugar. When you cannot easily get either oranges or lemons, buy a small bottle of lime-juice; this will keep good in a cool place for a great length of time; it is very wholesome, and a table-spoonful, with half a pint of water, sweetened, will make a glass of good lemonade in a minute. Perfect silence is not always desirable. It is not a good thing to put on list slippers, and walk about without any noise: if you go up to the bedside of a patient in this way he may get a severe fright. In talking, the same rule holds goods; do not whisper, it will very likely awaken the sleeper, just because it is a strange sound; speak in your natural voice, and it will not arouse him, though it be louder than a whisper, for he hears it every day and is used to it. Therefore, let all every-day sounds go on as usual, *unless complained of by the patient*, and let this reflection comfort you —sleep in the midst of noise is sounder and more likely to continue than in perfect silence, because slight causes are less likely to disturb it.

"Is it well to awaken a patient to give food or medicine? Generally you may conclude that if a patient sleeps he is doing well; but in the sinking stage of fever, or other great debility, it may be needful to give something frequently. After days and nights of watchfulness, where the mind is wandering with fever, the patient will fall into a long sleep which may last many hours. * * This is the turning-point of the disease, and generally the patient wakes with the mind restored, and from that time commences, as it were, a new life."

A fever, when once formed, runs its course. In treating it, the object is to weaken it as much as possible by fresh air, and support life by appropriate nourishment until the disease has run its course, or worn itself out.

Prevention is better than cure. We cannot always decide at the beginning whether the illness be fever or not, and our efforts should be directed to do good if the case developes fever, and do no harm if it does not. Exposure to rain and cold may produce headache, shivering, shooting pains in the limbs, back, etc. The patient should soak his feet in hot mustard water, take some hot drink, go to bed, and at night take a dose of castor oil. This is not only judicious treatment in case of a cold, but often assists nature in throwing off an attack of fever.

Fever and Ague—Intermittent Fever.—This disease is very prevalent in some parts of this country, and one of the most singular to which mankind is subject. The first symptoms of fever and ague consist of a weak and languid feeling, and a disposition to gape, which cannot be controlled; he is then seized with severe chills, and begins to shake with a feeling of intense cold; the teeth chatter, the face, hands and skin become pale. It is a phenomenon which has not yet been satisfactorily explained, that a feeling of intense cold is experienced in midsummer, with the thermometer "among the nineties," or in a comfortable room, where no change of temperature takes place. The sense of cold felt by the patient, however, bears no proportion to the actual heat in the body, for while the patient feels as though he were freezing, the actual heat of the body is very little below the ordinary temperature. It is no doubt owing to some derangement of those powers which generate the heat of the body. After the sense of cold, shaking, chattering of the teeth have continued for half an hour—more or less—a reaction succeeds. The system becomes flushed with heat, the head aches, the tongue becomes dry and parched, there is a great thirst, and the patient is very restless. This stage is succeeded by a profuse sweat. These various stages distinguish the fever and ague from all other kinds of fever. Generally these symptoms occur every other day, and during the intervals the patient has comparative good health. Sometimes the symptoms return every day, at other times every fourth or sixth day, until the disease has run its course or been arrested by medicine. Sometimes fever and ague runs its course in thirty days, and in other cases it will continue six months or a year. It is not necessary to speak of the causes of this remarkable disease, further than to say that it is common to all new countries, and to the vicinity of stagnant swamps, the banks of large rivers at a low stage of water. When the particular kind of disease is discovered with which a patient suffers, the most important matter is to ascertain the means of curing or relieving it.

In the treatment of fever and ague the first object sought is to produce warmth in the patient. His feet should be put in a tub of hot water; he should then be put into a warm bed and hot drinks administered to him, as hot lemonade, hot pennyroyal tea, etc. Wrap a hot brick, or a hot board in flannel, and apply to the pit of the stomach. Some physicians recommend thirty drops of laudanum or morphine, for an adult, and if this does not produce warmth and quiet in half an hour, the same dose may be repeated. After the first attack, and just before the next one is expected, the laudanum may be given. Sometimes this alone has cured the ague.

As soon as the hot stage of the disease commences, remove all heating substances, give cool drinks, and admit cool air. In ordinary cases an emetic is advisable at the beginning of the hot stage. The most uniformly effectual for this purpose is the powder of ipecac. A common dose for an adult is a common-sized teaspoonful mixed with molasses. If this is not at hand, thoroughwort may be used. Lobelia is preferred by some. This preparation is a tincture made by putting two ounces of dried leaves into a pint of diluted alcohol. A table-spoonful of this medicine is given every fifteen minutes, until vomiting is produced. It will not require, even in obstinate cases, more than three doses; one will usually accomplish it. If, however, the third dose does not do so, wait an hour or more before another is administered.

If the heat of the body becomes very great, a little blood may be drawn from the arm, or from the temples, by leeches. It is held that this often prevents inflammations and ague cakes, which sometimes form in the liver and spleen—indurations which frequently result in dropsy or fatal visceral obstructions.

After the emetic, give a dose of oil, or salts, or some other cathartic in domestic use, to free the bowels of bile or other offending matter. For the purpose of hastening perspiration, a teaspoonful of sweet spirits of nitre may be given. One of the best drinks which can be given to a patient in the hot stage of fever is that made of the super-carbonate of potash and lemon-juice, or distilled vinegar.

Quinine is the remedy generally relied on to break up this disease. This chemical salt, obtained from Peruvian bark, is given in doses of two grains of the powder, once an hour, for five or six hours previous to the chills. Pills of one and of two grains of quinine are to be had at almost any drug store. Sometimes patients prefer taking it in liquid. Dissolve sixteen grains of quinine in two ounces of water, acidulated with four drops of sulphuric acid. During the intervals of the disease a teaspoonful is to be taken once an hour.

Other remedies are often used to arrest this disease, both in ordinary and protracted cases. In the latter mineral salts, as blue vitriol, sulphate of zinc, and mercurial preparations. These should be left to the physician's judgment.

In this disease the diet should be light and nourishing. Sometimes, though not often, persons will take food into the stomach during a paroxysm of the fever. This should never be; but after the paroxysm subsides, broths, soups, vegetables and meats of easy digestion may be eaten in moderation. Intoxicating drinks are very injurious, and should be studiously avoided in cases of fever and ague. Not only do they retard a cure, but may convert the disease into chronic or incurable inflammations of the vital organs of the body.

When this disease has continued for some time, without suceess in breaking it up, it occurs not unfreqently that dropsical swellings begin to manifest themselves. In such cases, medicines which operate on the kidneys and bowels should be taken. Calcined magnesia, cream of tartar, and Epsom salts will be found useful for this purpose.

Some persons, in certain districts, are subject to annual returns of fever and ague, and it appears to be difficult, when these annual attacks have occurred several years in succession, to get rid of them. The constitution becomes enfeebled, and the health appears to be seriously undermined. In such cases the best thing to do is to seek a change of climate, and find a locality more congenial to health.

In the modern treatment of all fevers, free use is made of cold water, both as a drink and a bath. In the hot stage of fever and ague cold water is a great relief, taken inwardly and applied outwardly by sponging the body.

Slow Fever, Continued Fever, or Nervous Fever.—Under all of these names a fever is known which is found wherever man is known, though chiefly confined to temperate climates.

An attack of this fever is usually preceded by loss of appetite, loss of strength, and loss of mental activity, a heavy, sinking feeling at the pit of the stomach. The head swims, and the eyes look dull and heavy. Oocasionally these symptoms are attended with cold chills, over the whole body. There is pain in the forehead, and sometimes in the back and loins. The most unfailing symptom, however, is the feeling of oppression at the stomach. "The eyes become red, the face flushed, the pulse strong, full and frequent—it will often beat from ninety to one hundred and twenty strokes in a minute. The thirst will be great, the bowels costive, the blood will rush to the head, and there will be a disposition to vomit. Delirium is no uncommon symptom."

In this climate the usual length of time in which this fever runs its course, is from two weeks to seventeen days, unless the case is a severe one.

The domestic remedies for this fever are these: While the sense of cold lasts, warm drinks should be given and warm applications made to the skin; bathe the feet well in hot water, and place the patient in a warm bed. As soon as the coldness passes off, a gentle emetic should be given, and after its effects are well over, administer a gentle cathartic.

"The most suitable drinks in a regular continued fever," says "Popular Medicine," "are cold water, lemonade, apple-water, tamarind-water, bayberry water, soda water, and the acetate of ammonia, which last is perhaps, in addition to its property of quenching the thirst, one of the best febrifuges in the *materia medica.*"

The same authority says: "Sleep is a most desirable and necessary refreshment in fever, and from nothing does a person affected with fever suffer more than from loss of it. Opiates in this fever are, for the most part, injurious and powerless. We must, therefore, resort to means which lessen the heat and increase the secretions. Cold bathing should be daily and thoroughly made use of, just before the usual time of sleep. A teaspoonful of the sweet spirits of nitre should be given every hour, for at least three hours before bed-time. The room should be cool and the bed-clothes light.

"On a return of the appetite, chicken broth, soup, milk porridge, custard, boiled salt pork, salt fish, and toasts of coarse wheat and

Indian bread, will afford the most appropriate diet. But, after all that can sometimes be done, in a continued fever, the patient will often have to pass wearisome days and nights before recovery, and he can only reconcile himself to the endurance of so much restlessness and misery by the reflection that it is the common lot of humanity."

Scarlet Fever, or Scarletina.—This is one of the most prevalent of the eruptive fevers. Like other diseases of this class, the early symptoms of an attack of it, are chilliness, debility, lassitude and headache. There is more or less sore throat also. This is a characteristic feature of this disease; the back of the mouth and throat are of a reddish color, indicating some inflammation. Generally on the second day of the disease the eruption appears in the form of a red rash, consisting of innumerable small scarlet dots; as the disease advances the dots increase, spread, and run together, giving the skin a continuous scarlet color. There is a good deal of fever, as a general thing, the temperature of the skin being high; and the higher it is, usually, the more severe is the disease. The tongue, in the first stages of the disease, is more or less coated with a grayish fur, especially in the middle, through which may be seen many small reddish nipple-shaped points or papillæ; but as the disease advances, the tongue sometimes becomes suddenly clean, leaving the surface very red. About the time of the crisis it is not unusual for the tongue and whole lining surface of the mouth to be raw and exceedingly tender, rendering it extremely painful to take into the mouth any but the mildest liquids.

The most constant symptom in scarlet fever—and one without which it never exists—is a peculiar inflammation of the throat, which almost immediately runs into a state of ulceration. To examine the throat, take the handle of a spoon and press the tongue down; the palate and throat, as far as can be seen, appear swollen and of a deep florid color, and upon one or both tonsils may be seen whitish gray ulcers. These ulcers are sometimes small, and are usually confined to the tonsils, though they sometimes extend to contiguous parts. The swelling of the throat consequent upon inflammation and ulceration cause difficulty and pain in swallowing. This difficulty is so great in some cases as to render it impossible to get anything into the stomach, liquids being frequently ejected through the nostrils. There are cases, however, where swallowing is performed without pain or inconvenience. The secretions of the throat are very much increased and acrid, creating an almost incessant inclination to swallow in order to clear the mouth and throat of the acrid mucus with which they are constantly being filled. This accumulation of mucus in the throat and back portion of the nostrils gives rise to another symptom, particularly in children; this is a disagreeable rattling noise in breathing, caused by the passage of air through the accumulated phlegm which is constantly being forced forward and discharged from the nose.

If the case be a mild one, all of these symptoms are present in a moderate degree: the throat is not very sore, the swelling of the neck is not very great, and the amount of eruption is moderate. It is a common opinion that if the eruption comes out well the patient is in less danger, but this is a mistake. The more intense and extensive the eruption, the more severe is the disease.

For a long time scarlet fever and measles were confounded. They resemble each other in several respects but the following tabulated description will indicate the difference between them:

SCARLET FEVER.	MEASLES.
1. In the early symptoms vomiting is a prominent feature. There is an inflamed state of the throat.	1. In the early symptoms, sneezing, cough, and other symptoms of cold are prominent. Throat not affected.
2. The eruption occurs on the second day of the fever.	2. The eruption does not generally occur so soon; usually on the fourth day.
3. The color of the eruption is bright scarlet. The eruption is in large patches extensively diffused.	3. The eruption is darker, and occurs in small circular or crescentic patches.
4. The skin peels off freely.	4. Slight casting off of the skin
5. Dropsy often follows.	5. Dropsy does not follow.

The worst cases of scarlet fever are those in which the disease begins with great severity. It sometimes sets in with delirium and convulsions, the throat being very sore, the neck swelling rapidly, occasioning difficulty in swallowing and breathing. Such cases are apt to terminate fatally early in the course of the disease. According to the severity of the disease its course will probably be. The very mild cases go on very well. About the fifth day, the skin which has been affected with the rash begins to peel off; and this may extend over several weeks. While this continues, the patient needs care, and especially protection from cold.

It is common for the passage from the throat to the ear to participate in the disease, inflammation extending to that region, and causing pain and swelling of the glands under the ear and jaw. These sometimes increase to a large size, early in the disease and extend around the fore part of the throat, and pressing upon the windpipe, produce suffocation and death. Generally, however, such swellings progress slowly, and long after the fever has subsided, either gradually disappear or go on to suppuration, and ultimately break and discharge their contents externally. When abscesses form and discharge through the ear, partial deafness sometimes results which is nearly always permanent.

Cases of scarlet fever are apt to be interrupted by some unsatisfactory symptoms, as swelling of the face, eyelids, or other parts of the body and paleness of the skin. This is the dropsy after scarlet fever, and it occurs quite as often after mild attacks as after severe ones. In such cases active physics and diuretics, combined with mild tonics, are the remedies on which we must depend.

A great diversity of opinion prevails about the treatment of this disease. But the most rational practice, and one that will always be safe, and generally successful is that given in "Popular Medicine," which is as follows:

"When a person is attacked with the symptoms of scaret fever, one of the first and most important things to be done, is to bathe the feet and hands in hot water, which may be rendered more efficacious by the addition of mustard, cayenne, salt, or some stimulating herbs. A deep vessel should be used, and the bath continued twenty or thirty minutes, and for the first two or three days should be repeated twice or thrice a day. When the fever has set in, the cold stage having passed off, simple warm water will be preferable to a stimulating bath, and if the patient be very weak, once a day will be sufficient. Should the patient not have strength to sit in a chair, he may recline upon a bed, and let his feet hang off into a pail placed upon a stool of convenient height; or woolen clothes may be wrung out of the bath and wrapped around the feet and legs. The cloths must not get cold before they are changed. After the bath, if the head is affected, as is usually the case, mustard or some other stimulating poultices should be applied to the feet, of sufficient strength to produce some degree of smarting. As the disease advances, however, should the heat be great, stimulating applications become uncomfortable, unnecessary and should be omitted. During the cold stage, warm sudorifics or perspirative drinks, such as saffron, pennyroyal, or catnip tea, or vinegar whey, should be freely given if the stomach will retain them; but should the stomach be irritable and the vomiting frequent, very small quantities only of liquids should be allowed, and these must be of a nature calculated to allay the sickness. For this purpose, toast-water, spearmint or small draughts of soda-water, are among the most suitable. A strong mustard poultice applied over the pit of the stomach is often a valuable remedy for the sickness and vomiting. Should there be sickness and oppression of the stomach, without much vomiting, attended with headache and costiveness, a gentle emetic of ipecac., or warm thoroughwort tea may be attended with beneficial effects; and should it not operate upon the bowels, may be followed by a small dose of castor oil, Epsom salts, calcined magnesia, or some other gentle physic. Powerful emetics and cathartics are not only unnecessary, but decidedly injurious in every stage of the disease.

"The second or eruptive stage of the fever may be reckoned from the second or third day to the seventh or eighth, during which time the patient should be kept perfectly quiet; if possible in an airy room, from which the light should be excluded. The bed clothes as well as the body linen, should be light and frequently changed, and in every particular the greatest attention should be paid to cleanliness and the general comfort of the patient.

"No solid food of any kind will be required or allowable. Patients with this fever, suffer much from thirst—a strong indication that liquids are necessary and proper—and as, after recovering from the first shock of the disease, the stomach will generally retain them in any reasonable quantities, cold water, lemonade, barberry or tamarind water, thin gruel, rice water, balm or flax-seed tea, or some other unstimulating beverage should be liberally allowed, both as the means of contributing to the present comfort of the patient and of mitigating the fever. In case of costiveness a teaspoonful of cream of tartar dissolved in a pint of flaxseed tea and sweetened to the taste, and drank at intervals may also do well under these circumstances. Should this condition of the bowels prove obstinate, a small dose of castor-oil, Epsom salts, calcined magnesia, and rhubarb or Rochelle powders must be resorted to. With the view of promoting the action of the skin and kidneys, the spirits of nitre, in doses of ten drops to a teaspoonful, according to the age of the patient, may be given every two or three hours, in cold water, or in some other simple vehicle. The nitrate of potash—saltpetre—being one of the best refrigerants with which we are acquainted, and also an excellent local application to an inflamed and ulcerated surface, appears to be admirably adapted to the cure of this disease. By coming in contact with the ulcers in the throat in being swallowed, it answers the purpose of a gargle, and in the stomach it exerts a favorable influence upon the fever. It may be given every three or four hours in doses of from one to ten grains, dissolved in sufficient water to make a teaspoonful a dose for an infant, or a tablespoonful for an adult. Ipecac. is a very safe medicine, and as it promotes the healthy secretions of the stomach and bowels, and also operates upon the skin, is well adapted to the treatment of scarlet fever. The dose should not be so large as to nauseate much; from a quarter to half a grain for a child, or a grain for an adult, may be given every three or four hours, mixed with molasses or syrup, or combined with either of the medicines before mentioned."

In cases where the fever settles upon the brain or some other important organ, bleeding from the arm, or by leeches applied to the part most affected, will sometimes be followed by relief, and perhaps contribute to the restoration of the patient. It is seldom necessary to bleed the patient, and it should be resorted to with great caution.

Some prominent physicians give muriatic acid in this disease, and as it combines tonic with febrifuge properties, seems to be well adapted to the nature of the complaint; but others use it only in those cases in which there is great debility, and an obvious tendency to putridity. In giving it, take a half pint glass tumbler and drop into it forty-five drops of the acid, fill the tumbler with water, and sweeten with loaf sugar or honey. A dose for a child is a teaspoonful; for an adult, a tablespoonful given every two or three hours. In extreme cases these quantities may be considerably increased.

"One of the most powerful, and at the same time most pleasant means of carrying off the inordinate heat, (says the authority above quoted), and subduing the raging fever, is a persevering application of moderately cold or tepid water, vinegar and water or weak spirit and water. When the heat is very great, it may be applied over the whole surface of the body with a sponge or soft cloth; but if the heat be moderate and confined to the head, it should be applied to the head principally. If the sensation produced by the application of cold be agreeable, we may expect a beneficial effect from it: but if it be disagreeable, it will be doubtful, and tepid or warm water should be preferred. Extremely cold water or ice gives a shock to the system that will be followed by reaction more or less violent, and an increase of heat; whereas that which is moderately cold or tepid — evaporating quite as rapidly, and consequently dissipating fully as much heat — is not liable to this objection. Whenever the heat of the body is greater than natural, it will be perfectly safe to keep up a constant evaporation from its surface. This should always be the criterion, for if the temperature be below the natural standard, the application of cold by too much exhausting the vital heat, may prove injurious."

The effect of bathing with cold or tepid water in this disease, is highly agreeable and soothing to the patient when suffering from the scorching heat of this fever. The practice of cold effusions was introduced by Dr. Currie, and has justly immortalized his name. It is of great benefit, and is considered one of the most valuable improvements in the art of medicine.

During the convalescence of the patient, pains in the limbs are not uncommon. These will subside as the strength is regained. Such pains may be mitigated by frictions with spirits of camphor, alchohol or stimulating liniments. If they are attended with much debility, tonics and mild anodynes may be required. Due attention must be given to the bowels and the diet. The patient should take moderate exercise daily, but not beyond what his strength will warrant.

While this dangerous disease is generally confined to children, adults are by no means exempt from its attacks. Its prognosis is exceedingly difficult and uncertain, and if medical assistance can be procured, never undertake its treatment yourself.

To prevent the spread of the disease, when it occurs in a house the patient should be kept in a large room, and separated from the rest of the family as far as may be. This room should be divested, as far as possible of curtains, clothing, and articles of furniture to which the contagion is apt to stick. The patient's linen, bedclothes, etc., as used, ought to be well boiled, or exposed to a dry heat of two hundred degrees Farenheit. A solution of chloride of lime (one pound to eight gallons of water) ought to be kept in the room in plates or basins, or in cloths hung on a screen. Another measure which tends to prevent the spread of the disease, is to oil the patient's skin well and daily, while it is peeling off. A little of the solution of chloride of lime should be mixed with the various discharges from the patient's body.

The Measles.—Next to scarlet fever, the most common eruptive fever is the measles. This disease is also catarrhal, affecting the lungs as well as the skin; the peculiarities being a hard, croupy cough and an eruption. Its duration is limited; it affects the same individual but once in a life-time, and that generally in childhood. Its symptoms are well-marked and easily recognized.

An attack of measles begins very much like a common cold. There is a croupy cough, loss of appetite, and thirst, and these symptoms are accompanied with sneezing and red-looking eyes, and the secretion from the lining membrane of the nostrils is very irritating, the head aches, the patient is drowsy, and the stomach often rejects its contents, the tongue is coated, and the pulse quickened. This stage may last from two to five days, when the eruption occurs, first on the forehead and neck, then on the face, and then gradually extends over the body. The rash usually occurs on the fourth day in irregularly grouped crimson dots, which are slightly elevated. It the course of the next twenty-four hours they run together, beginning at the head, and the disease comes to a crisis.

Measles, when properly managed, cannot be considered a dangerous disease. Simple cases soon get well; but a few complications may arise which require the strictest attention. One of the most serious of these is inflammation of the chest, which in winter is sometimes troublesome and dangerous. Medical skill, in such cases, should always be sought.

The domestic treatment of the measles consists in keeping the patient in a bed, in a room of comfortable temperature, and in administering light diet. During the first stage of the disease the symptoms may be mitigated by bathing the feet once or twice a day in hot water, and by the use of drinks to produce perspiration. Molasses and water, flax-seed and slippery-elm tea, are appropriate for this purpose. If the case is mild, that is, if the feverishness is not great, and the breathing is but little quickened, little more treatment is required. Should the rash not appear in due season, a strong mustard bath, followed by mustard or other stimulating poultices to the feet, and warm vinegar whey, saffron, pennyroyal, summer-savory tea in copious draughts, should be tried. If there should be much difficulty of breathing, with a sense of oppression at the stomach, the application of a strong mustard poultice to the chest will be followed sometimes with the happiest effects.

Diptheria.—This disease consists essentially of a peculiar form of sore throat—or, rather, bad throat—for sometimes it may not be felt by the patient. There may be very little soreness and no pain. The tonsils of the throat—oval-shaped bodies at the side of the throat—are covered, more or less perfectly, with a white covering of very different degrees of consistence. Sometimes it is tough almost as leather, and again as soft as cream or soft cheese. All above this the throat is seen to be red. Swallowing is generally a little painful, and may be very much so. At a later period in the disease, swallowing may become very difficult from a sort of palsy of the muscles. In bad cases, the tube connecting the throat and the ear may be affected; and so also may the cheeks inside of the mouth and the tongue itself be covered with the white covering described above.

Diptheria is mostly prevalent among children, but adults are not exempt from its attacks. During the recent civil strife in this country it was epidemic at various points among the soldiery, and its inroads were sometimes very alarming and fatal. It is one of the most dangerous diseases which afflict mankind. It is greatly feared, and with reason. Where medical aid can be obtained, it should always be called in when diptheria attacks a member of the family. The disease prevails sometimes in epidemic form, and sometimes scarlet fever prevails at the same time; this fact has led some to think that the diptheria is only a form of scarlet fever, but the diseases are quite distinct.

In the more severe cases there may be a swollen state of the glands of the neck, and in very bad cases it is common for the windpipe itself to become affected. The white matter thrown out on the inside of the windpipe gives rise to the sound and other symptoms of the croup. When this happens there is generally more or less coughing, which sometimes brings away the white covering in larger or smaller pieces. These are the local effects of diptheria, but there are general symptoms, as shivering when the disease sets in, especially in bad cases, soreness and weakness, head-ache, general aching, and stiffening of the neck. This is soon followed by prostration and restlessness; the breath becomes fœtid, and the tongue furred. There is some feverishness, and the pulse is quick and feeble. In bad cases, vomiting is a frequent symptom. There are two sources of danger in this disease; first, that the patient may choke by the white matter filling up the windpipe, and second, by exhaustion and prostration. Even in cases in which the breathing is not interfered with, there may be such complete prostration of strength as to bring life into danger; and this is the principal risk of the disease in grown-up people. Recovery from an attack of diptheria is likely to be slow and hindered.

This disease is apt to produce several consequences which take a long time to disappear. It frequently produces palsy of the muscles of the throat, or of the limbs. Such results may come on shortly after the attack, or it may not follow for weeks after. Without actual paralysis, the patient may be completely prostrated for a long time.

In the treatment of diptheria, the great thing to do is to support the patient. We repeat that a disease so serious requires medical aid. If this cannot be readily obtained, the following mixture represents the kind of medicine to be given:—chloride of potash, one drachm; tincture of per-chloride of iron, one drachm; simple syrup, half an ounce; distilled water, eight ounces. An eighth part to be taken every three or four hours. The diet should be such as to support the patient—beef tea and milk. Wine, or even brandy, in severe cases, will be required. Gargling the throat with warm water is soothing. A teaspoonful of potash in a tumbler of water makes a gargle which is much used in this disease. Inhaling the fumes of hot vinegar induces coughing in the advanced stage, and this aids in expelling the white substance in the throat. Happily only a few cases of diptheria are very bad ones, and recovery is by no means unfrequent in these severe cases.

Precautions should be taken to prevent the spread of the disease, when it has made its appearance in a locality. All the discharges from the throat, after gargling or at other times, should be made into a basin containing some disinfecting fluid; and the motions, secretions, etc., should also be mixed with the disinfecting fluid. The patient should be kept as quiet as possible, and not seen unnecessarily by other people. Where diptheria or diptheric sore throat occur in a house—especially if one case occurs—the house should be looked after to see if it is airy and healthy, and that the drainage is all in order. The room should be disinfected. A valuable agent of this kind should be kept in every household for the purpose of cleansing and purifying anything of a foul, unwholesome, or poisonous character.

Brain Fever.—This is an inflammation of the substance of the brain, and the membranes which enclose it. It is always dangerous, especially when it is the result of falls, blows and concussions. A physician should be called as soon as possible. This malady comes on with violent deep-seated pain in the head, inability to sleep, redness and swelling of the eyes and face, and impatience of the light and of noise, and a raving delirium.

In the absence of medical aid, the treatment should be to shave the head immediately and apply cold water to it; where ice can be obtained, it is to be preferred. Some strong purgative medicine should be given; a quarter of a grain of tartar emetic and six grains of nitrate of potash should be given in solution, every hour, until moisture is produced upon the skin. The acetate of ammonia is highly beneficial in producing a sweat, and at the same time cooling to the stomach.

In reducing the heat and fever, ether, applied to the head, will sometimes be found superior to cold water. The sweet spirits of nitre often proves a sedative. Opiates, in every shape, are found admissible in this disease. But the treatment must be given over to a physician, where one can be had. It has been advised that the patient should be kept in an erect posture, as much as possible, by pillows. Light should be excluded from the room and all confusion and noise avoided.

Cramp.—By this term, in this place, we mean that painful affection of the muscles, particularly the muscles of the legs, arms, hands, feet, etc. It attacks, for the most part, young people growing up, or those who perform heavy work with their feet. It attacks persons sometimes when climbing, and when bathing or swimming. It is usually relieved by rubbing the part briskly with the hand or a piece of dry flannel. When the attacks of cramp become severe, the patient may take twenty-five drops of laudanum, and rub a teaspoonful of it upon the muscles affected. A teaspoonful of spirits of camphor, taken in a little water, is also beneficial in quieting the cramp. It sometimes comes on after getting warm in bed, and will disappear in getting out into the cold. If produced by exposure to cold, warmth will carry it off.

Asthma.—The characteristics of this disease are laborious respiration, accompanied with a wheezing noise. There is tightness across the chest, and speaking is difficult. The patient feels as if the air vessels of the lungs were all choked up, and that suffocation is eminent. But the disease rarely proves fatal.

The domestic remedies in this disease are, causing the patient to vomit, by giving an emetic, giving warm flax-seed tea for a drink, breathing the steam of hot water, burning in the room a piece of paper which has been soaked in a solution of saltpetre and dried by the fire. Goose oil is used to relieve wheezing. Strong hot coffee will sometimes relieve the attack. Intoxicating drinks are exceedingly hurtful. In general, the most certain expectorants will alleviate this disease.

Apoplexy.—In a fit of apoplexy the first thing to be done is to loosen the clothes, especially anything about the neck, place the patient in a horizontal position upon a bed or in some place where he can lie comfortably. Dash cold water upon the face and head, and some should be given, if the patient can drink. If the person attacked is robust and strong, and the condition of the blood-vessels of the face and neck indicate that the brain is oppressed with blood, bleeding in the arm should be resorted to. If there is no person near who can bleed the patient, an injection of common table salt, dissolved in warm water, should be resorted to. Sometimes the fit comes on soon after a full meal has been eaten; in that case an emetic of ipecac., or of powdered alum, should be resorted to, for the purpose of removing the pressure upon the stomach; or fifteen grains of the powdered leaves of lobelia may be used for this purpose. But unless the stomach has been over-loaded with food or indigestible substances, no emetic should be given. Apply mustard poultices to the feet, and leeches to the temples, if they can be procured.

A full dose of oil, salts, or aloes should be given, if the patient can swallow. In case nothing can be swallowed, the use of purgative injections, such as senna and salts, or antimony, must be resorted to.

After a movement of the bowels has been produced, stimulating injections, spirits turpentine, for instance, have a strong tendency to awaken the vital powers.

Abscess.—Warm poultices and fomentations hasten the formation of matter, and soften the superincumbent skin and flesh. The best treatment therefore consists in the application of poultices made of white bread, flax-seed, meal, and rye-meal. The best washes or fomentations are warm water, milk and water, poppy tea, lettuce tea, and a liquor made by boiling wild indigo root. When matter forms in a tumor, it is the best plan, as a general thing, to open it with a lancet. Sometimes abscesses are opened by the application of a caustic, or the introduction of a seaton. In cases of feeble constitutions, where abscesses are large, it is well to impart strength to the system by giving quinine or preparations of iron before opening them. As long as any redness, or signs of inflammation exist, after pus or matter is discharged from an abscess, the poultices should be continued. The cavity should be well cleansed often, and after the inflammation has subsided the abscess may be covered with a plaster of simple cerate or ointment.

Billious Disorders.—The billious or remittent fever prevails mostly in the Southern and Western States. It is common also in the Middle States, but in New England it is seldom met with. It resembles, in some degree, the fever and ague, but while the latter is characterized by a complete *intermission* of the *paroxysms* once in twenty-four, forty-eight, or perhaps seventy-two hours, in billious or remittent fever there is only a *remission* or abatement of the symptoms; the fever does not disappear entirely until the patient recovers.

Sometimes the bile flows into the stomach, and when it does, vomiting is produced. When bile is taken up into the system by the secretory vessels, it imparts a yellow color to the skin and the whites of the eyes. The perspiration and secretions of the bladder are stained by it. It is the bile that gives the fæces their yellow color. If the entrance of the bile in to the bowels is obstructed, the fæces become of a clay color, and the motions of these organs is slow; unless remedied, this condition will bring on disease. An excessive flow of bile into the bowels causes a rapid motion, or what is known as billious diarrhœa.

The billious fever begins with a sense of languor, pain in the head and back, frequent flushes of cold and heat, thirst, difficulty of breathing, furred tongue, dejected spirits, nausea, and vomiting.

In the domestic treatment of this disease the first thing to be done is to relieve the stomach and bowels by a dose of physic. Bathe the feet in hot water, give a tumbler full of thoroughwort tea every two hours until it operates, and then give a teaspoonful of sweet spirits of nitre in a little water, every three hours, until the fever abates.

One of the best, safest and surest remedies in billious fever, is cold water, but be careful that its use is omitted when there is any chilliness or perspiration present.

In case the patient is delirious, apply mustard poultices to the feet, and between the shoulders; or, use a blister between the shoulders; it should be eight inches long by six inches wide, for it must be large to do much good. The nourishment should be simple—gruel and bread water, rice water, barley water, or some other vegetable substance. For the drink, use cold water, lemonade, soda powders, or Rochelle powders. Avoid noise and confusion, exclude the light and keep the room cool and supplied with fresh air. Where medical aid is at hand, it is better to call it in than to trust to domestic remedies, and especially so if the symptoms indicate a severe attack.

Inflammation of the Bladder—Cystitis.—This is a dangerous disease and requires the skill of a physician at once. The malady runs its course very quick. If there is a complete stoppage of the water, and relief is not obtained, death must ensue in a few days. In case the bladder is full and distended, without the power to expel or void its contents, they should be drawn by a catheter. No more liquids should be drank than is absolutely necessary to quench thirst, and the medicines given must not be such as to increase the secretions of this organ. This disease sometimes ends in suppuration; the matter will be discharged with the water. If this matter is discharged into the abdomen, the patient will die. Apply leeches freely, and bleed the patient; drain the bowels with mild purgatives; a perspiration should be supported; the warm bath is beneficial.

Boils.—The pain of a boil may be alleviated by a dose of morphine or laudanum. A white bread poultice, with a teaspoonful of laudanum in it, is a good remedy to relieve the pain of a boil, and hasten suppuration. A plaster of lead salve is a valuable thing for a boil. It should be larger than the boil in order to support the skin and flesh for some distance around it. It lessens the soreness, abates the pain, and obviates the rubbing of the clothing about it.

Bronchitis.—This is an inflammation of the mucous membrane. If the case is a mild one, it may be treated very successfully by domestic treatment, but an experienced physician should be called if the attack is severe. Mild emetics should be given, and their action aided by copius draughts of warm water. Perspiration should be promoted by bathing the feet in hot water, and giving hot lemonade, flax-seed tea, or vinegar whey. If there is pain in the chest, it should be fomented with a decoction of camomile flowers, or other bitter herbs. If there is no motion of the bowels from these remedies, a dose of castor oil should be given, and repeated as may be required.

Blood-Letting, or Venesection.—Indiscriminate drawing of blood in various diseases is reprehensible; but that bleeding is necessary and beneficial many times, it is folly to question. Judgment and discretion are necessary in blood-letting. The blood, in some way, is the source of heat in the body, and in inflammatory diseases, and an excess of heat, if the quantity of blood be lessened the heat is also reduced. The cases in which blood-letting is proper are indicated in some of the diseases mentioned, considered in this part of THE HOME GUIDE. But it is best to leave to a physician the operation. In the abstraction of blood, the use of leeches, scarifying and cupping is much more effectual in local diseases than venesection.

Carbuncle.—Carbuncles are hard, painful, dark-red tumors, which most commonly appear on the face, neck and back. It is futile to try to disperse these tumors, and the proper treatment consists in the use of emollient poultices and fomentations when they make their appearance. An excellent poultice is made of rye meal or flax-seed meal mixed with the strong tea of the white-poppy heads, or lettuce leaves. It is important to support the strength with a nutritious diet, and give sedative medicines. Mild cathartics are useful. A crucial incision made in the tumor will assist the escape of the dead core, and proper means should be employed to destroy the acrimony of the discharge.

Colic.— There are several varieties of this ailment, all taking this general name from the fact of being seated in the *colon* and parts adjacent — the billious colic, the painter's colic, and a colic produced by a rupture in the bowels, etc.

The most common kind of colic is that which is produced by eating unripe fruit and vegetables, and sometimes in eating too large quantities of those that are ripe. In these cases, the stomach should be emptied by an emetic, and if vomiting is not produced, a cathartic should be taken forthwith. If there is no sickness at the stomach in an attack of this kind, the wind may be expelled oftentimes by ten or fifteen drops of the essence of peppermint in a little hot water, or by a large spoonful of brandy. Hot drinks, as pennyroyal tea, or hot ginger and water will generally remove the common colic. Paregoric is also a good remedy; a dose for an infant is ten or fifteen drops; for a child half-a-year old, half a teaspoonful is a dose. Dry hot flannel cloths should be applied to the stomach and a hot brick or flat-iron to the feet. In cases where the distress is very great, an injection made of common salt dissolved in warm water, will often give instant relief. Infants are very subject to this kind of colic, and sometimes it is very severe. Half a teaspoonful of castor oil, and half a tespoonful of paregoric mixed, is an excellent remedy in these cases.

Bilious colic is the most dangerous form of this ailment. Its peculiar symptoms are a griping pain about the navel, accompainied by vomiting and a stoppage in some part of the intestines; also thirst, increased heat, and a discharge of billious matter from the stomach. The billious colic requires the attention and experience of a physician. If one is not within call, then if there is much sickness at the stomach the bowels must be operated on by injections. A teaspoonful of ipecac. infused in half a pint of warm water, or six grains of tartrate of antimony may be dissolved in the same amount of warm water, either of which used as an injection has the same relaxing effect as if taken by the stomach. Thoroughwort tea, similarly employed, serves the same purpose, usually. Nausea and vomiting may be allayed by effervescing draughts to which twenty-five drops of laudanum are added. When the stomach has become in a measure quieted, cathartics must be employed to produce motion in the bowels. Those that are mild should be used first, and if these do not answer the purpose, the stronger kinds must be employed.

Sometimes the warm bath is very effectual in producing relaxation and affording relief in this disease, and hot fomentations are always in order, applied to the stomach and bowels. Toast water, balm and sage teas should be the drink of the patient.

The painter's colic, though differing from the bilious colic with respect to its cause, requires similar treatment. A table-spoonful of powdered alum mixed with molasses or jelly, is given with success in this variety of colic. This substance has been supposed to combine chemically with the lead and thus neutralize its effects.

Constipation.—The best and surest way to remedy this complaint is exercise and proper diet. Exercise quickens the blood, and this gives a quicker motion to the bowels. Coarse vegetable food is also beneficial; rye and Indian bread, salted pork and beef, fresh butter, cheese, milk, buckwheat, beans, potatoes, cabbages, turnips, carrots, etc., apples, peaches, grapes, all are well suited to health.

Bread made of fine flour, especially hot biscuits, crackers, doughnuts, and rich cakes generally, are productive of this difficulty; and so are fresh meat, rich gravies, and sauces. Insufficient food, and that of unwholesome quality, produce constipation. Some mild physics, as rhubarb pills, etc., taken in quantities just sufficient to produce proper motion without weakening the bowels, should be taken.

Consumption.—It is hardly necessary to describe this malady. Every one knows that it is a dangerous affection of the lungs, that it is attended with a cough, the raising of purulent matter in its advanced stages, and a hectic fever. Unless its progress is arrested in the earlier stages of the malady, a cure is seldom effected.

In the domestic treatment of this disease, a valuable medical work, from which we have before quoted, says: "It is of essential consequence, in the consumption, or in the commencement of those symptoms which threaten it, to adopt such a kind and quality of dress as will the most effectually secure the person against the changes of the atmosphere and of the seasons. Atmospheric changes have a great agency in inducing the disease, and in hastening its progress when it has once commenced. A shirt made of wash-leather, and constantly worn next to the skin, and stockings made of the same, have probably saved many a person from the grave. The invention of India-rubber shoes deserves to be commemorated through all time. They should always be worn in cold or wet weather by people who are subject to a cough and to cold feet. No change of fashion should induce consumptive invalids to lay them aside. To some persons they may be a little uncomfortable on account of their tendency to excite perspiration in the feet, but this is no real objection to their use. As soon as the weather becomes warm and the earth dry they may be left off with impunity, and should be resumed as soon as the weather becomes cold or wet in the autumn. The expenditure of animal heat is an expenditure not only of the vital powers, but of the healing powers of the system. To husband the animal heat properly requires no small degree of attention. Besides the leather shirt and the leather stockings which can be purchased at any of the apothecary stores in large cities and towns, flannel drawers and a great coat or cloak are none too many clothes to be worn in the cold season, which commonly lasts (in the Northern States) from the first of October to the first of June.

"The diet of a person who has any tendency to phthisis pulmonalis should be chiefly confined to vegetable food. Everybody knows that vegetable food is less heating than animal food; in other words that it is much less liable to create heat, thirst and uneasiness. It softens the pulse and opens the body. * * * If vegetables cause scorbutic sores to heal we may rationally expect them to promote the healing of tuberculous ulcers. We have known several who have been threatened with consumption to live for months on hominy and molasses, and by this means, avoided the disease. Dr. Cullen and others formerly placed their whole reliance, in the cure of consumption, upon a vegetable and milk diet, but we think that patients in general, will stand a better chance of recovery without the use of milk. Milk may benefit some constitutions, but where there exists any degree of fever, it will be very likely to increase it. The vegetables most suitable for the ailment of consumptive people are potatoes, cabbages, turnips, beets, hominy, hulled corn, rye and Indian bread, rice, parsnips, asparagus, coarse wheat bread, buckwheat cakes, Indian cakes, apples, peas, peaches, grapes, and in fact all the nutritious and easily digested vegetables which grow in our climate. When people are obliged to labor in order to live, it will, perhaps be necessary for them to adopt something of an animal diet; but where this is the case, meat should not be used more than once a day. Salted codfish, is, in general, as innocent as vegetables and may be eaten as freely. Cheese is more innocent than milk and may, where it agrees with digestion, be eaten with impunity. Eggs are less feverish than milk, and more nutritious than vegetables; they should be eaten where vegetables alone do not sufficiently nourish the system. Honey is nutritious and wholesome and ought to be used instead of butter. New butter is much more healthy than old, and may be allowed where the taste absolutely requires it. But to render a vegetable diet efficacious it must be persevered in for a considerable length of time. The solids and fluids must be renewed by it. We do not recommend a spare diet, but on the contrary would advise rather a full diet, but to be composed chiefly of vegetable substances. Even this disease may be induced by too spare a diet, or by the use of food which has been damaged or decomposed. Deficiency of aliment disposes the human body to unhealthy sores and many serious disorders. The appetite corrected by personal observation and experience, will, in general, be a safe guide as to the amount of aliment to be taken. Oysters, lobsters, turtles, clams, and shell fish in general, may be eaten, where the strength of the system appears to require them, but should always be taken in moderation. All kinds of fish which are not of an oily nature are more suitable than meat. Shad, herring, trout and eels are probably less heating than even milk or eggs. Mackerel and the gray fish in general being of an oily nature, constitute an unsuitable aliment in cases of local inflammation and ulceration, whether in the lungs or any other part of the system.

"Next to clothing and aliment, exercise is of the most consequence in the treatment of consumption. In our country, in nineteen cases out of twenty any inducement to exercise is unnecessary. By far the greatest part of our people are either farmers, mechanics, or men in some active business, who need no other spur to exercise than necessity or ambition. There are, however, in our cities, a considerable class, particularly of the female sex, who suffer for want of that constancy and degree of bodily exercise which are essential to health, and to the full development of all the animal organs. The steady, constant labor to which all our farmers and mechanics are subject is exceedingly favorable to health and to the development of the full capacity of every organ; and there can be no question but that consumption is much less frequent among them, than among the professional and wealthy classes. No estimate has hitherto been made between the people of country towns and the cities, as to their liability to consumption; but when such an estimate comes to be made it will be found that country people who follow an active life are much less liable to it than the inactive inhabitants of cities. There is probably no life in the world more favorable to health in general than that of an American farmer. He is in general, temperate; his food is of the best kind; the air he breathes is pure and salubrious; his sleep is sound; his anxiety as little as it well can be in this life; his liability to excitement, either political or religious, much less than in the cities and manufacturing towns, and his situation and occupation are every day calculated to compose, to cheer, and to strengthen his mind. We would advise, therefore, all those who can be at all contented in a country town, on the first approaches of consumption to take up their abode there. The change of scene, as well as the opportunity for agreeable and suitable exercise will have the most favorable effect upon the disease. They will be in the midst of the vegetable world with all its beauties and medicinal powers. The sleep of the farmer is the most enviable and salutary enjoyments, which life in any situation can afford. This is a function of the brain, and the regulation of it is of scarcely less importance to the enjoyment of health than that of digestion or of respiration. No healing process can go on well without sound, refreshing sleep. It matters but little whether a person takes exercise on horseback, in a carriage, in walking, or in some kind of work, provided it be uniform and constant, and carried to such a degree as to feel a slight fatigue every night when he goes to bed. Occupation and labor have furnished more instances of cure in consumption than riding, walking, or any of those kinds of exercise which are pursued for amusement and recreation.

"Change of situation, of air, and of climate has an important effect upon the disease of the lungs. Where the consumption is induced by the depressing passions, as it often is, a mere change of siatution from one town to another, and from old associates and associations to new ones, will often work an agreeable alteration in the spirits and the disease. The winter season of northern climates is supposed to be very unfriendly to the cure of consumption; and it is thought if consumptive patients could only live in perpetual summer, they would generally recover. But it has been pretty well ascertained that people die of this disease in all parts of the earth, in the hottest as well as in the coldest climates, and in the most temperate as well as in the most inclement parts of the globe. The temperate and the equatorial parts of the earth, however, are much more exempt from the consumption than the cold and frozen regions. All the northern countries of Europe and America are remarkably productive of this disease."

While change of scene and an equable climate are highly beneficial, travelling, unless the invalid can be better entertained and amused by it, and unless he, or she, can sleep better at night than they can at home, is of no service, and had better be abandoned.

"The great mass of people who have the consumption can neither go on a sea voyage, nor make visits to foreign climates, nor change their residences to other parts of the country, and can rarely take any other exercise than what is performed upon foot, or in their ordinary occupations; nor can they experience any other change of scene than what chance, or friendship, or sympathetic kindness throws in their way; and perhaps, after all, they are not so much the losers by their situation as they are apt to imagine." * * * "During the cold season, where cold is found to aggravate the cough, a very good climate can be made within doors. * * * So far, therefore, as a dry, warm, even temperature is concerned, it can as well be obtained at home as abroad."

This much we have reproduced from a medical work, giving clearly an idea of how consumption is produced, and what experience has demonstrated as indispensible in its treatment, so far as general principles are concerned. Prevention is better than cure, and far easier in this disease; but still this dreaded malady is not always incurable. Cases of cure are not unfrequent, and even where it is not quite cured, sometimes, life is often prolonged for many years in great comfort and usefulness.

Cod liver oil is highly recommended to consumptives. It should be taken as food rather than a medicine. To begin with, a teaspoonful may be taken night and morning, and the dose gradually increased, as the stomach will bear. It seems to increase the strength of the patient, and heal the lungs. It may be taken in orange wine; different persons, however, prefer different ways in taking it.

As the cough is but one symptom of the disease, it may be treated with any of the various ordinary remedies used to relieve a cough. The following is recommended for an adult: Syrup of poppies, six drachms; syrup of squills, six drachms; mix: take a teaspoonful three or four times a day, when the cough is most troublesome.

When there is much feverishness, some cooling medicines will be of service. The following is highly beneficial: The effervescing citro-tartrate of soda, two scruples, to be taken in water, while effervescing, once every four hours.

These are the simple principles of treatment in this malady. The paramount object is to keep up the system, so that the lungs may heal, and that no fresh tubercle may be deposited. If care is taken, if food can be taken well, if fresh air can be inhaled freely, then there is good reason to hope that the disease will be arrested.

Catarrh.—Chronic catarrh is the result of repeated colds, and epidemic influenza. All exposures to sudden and intense cold, dampness or wet feet should be avoided. If it has become an aggravated case, the patient should take an emetic of ipecac., live abstemiously, and confine himself to a warm room. Dry feet, warm clothing, moderation in eating and drinking, and especial care in getting overheated and then going out into the cold air will do much to ward off the complaint. If there is redness of the throat and a thickening of the membrane, a gargle of white vitriol, dissolved in water, is well adapted to this state of the throat. The removal to a warm climate is a pretty certain cure of this disease.

Cholera Morbus.—The symptoms of cholera morbus are, sudden and severe vomiting, followed by purging, accompanied with severe cramps, generally in the bowels. Another feature is thirst. The cramps are generallly relieved by the evacuations. It is not a dangerous disease; an attack usually passes off in a few hours, but much pain and prostration may be saved by timely treatment. The patient should go to bed, a mustard plaster should be applied to the bowels. Some hot drinks may be given, and ten drops of laudanum and ten of spirits of camphor administered after every movement of the bowels. When the stomach begins to crave food, give a cup of hot tea to induce perspiration.

Cholera, Asiatic.—This dreaded disease is not necessarily fatal, unless it has taken hold thoroughly of the system. The time to do good is in the early stage. The symptoms of true cholera are, gentle purging for one or perhaps two days; and if this is not speedily checked, the disease soon runs into the next stage. Dr. Hope's description of the symptoms following the first stage are as follows: "What now passes from the bowels is not offensive; it is like rice water, or very thin gruel, and all control over the bowels is lost. It gives no pain, there is no straining, though there may be very severe cramps. In a few hours all strength is gone, the body, the tongue, and even the breath are quite cold, the nails turn blue, there is great thirst, perhaps constant vomiting; the eyes sink more and more in a few hours than they would do in months of ordinary illness, and the most remarkable change takes place in the voice. It becomes a small, squeaking whisper, so unnatural and so peculiar that any one who has seen much of cholera could distinguish it in a moment by the voice alone."

When a person is attacked, commence the treatment at once. The patient should go to bed, take some hot drink calculated to bring on perspiration; apply hot bricks and fomentations to the extremities, and mustard plasters to the bowels. An adult may take ten drops of laudanum and ten of spirits of camphor. A child of ten years may take five drops of each; a child of five years three of each; and these doses may be repeated every twenty minutes as long as diarrhœa or pain or vomiting continues.

The diet should consist of gruel made of flour, rice, or arrow-root, crackers, and stale white bread. If there is no fever, a little port wine, two or three times a day, with loaf sugar and water, may be taken. Pennyroyal tea, or tea made of common blackberry roots, may be used as a constant drink. The feet should be kept warm and dry, and the bowels rubbed with warm brandy, spirits of turpentine, or some other powerful stimulant, and kept well covered with flannel. Unripe fruit and green vegetables should be avoided.

Child-Birth.—(See Infant.)

Debility.—A great deal of complaint is heard under this term—debility; and one is led to suppose that a distinctive, simple weakness or giving out of the vital powers, was a disease that might be taken hold of and treated as any other ailment. The scientific truth is that weakness arises from some error of health, which must be rectified. All weakness, excepting that which is natural to infants, and young and old, and slender people, has a cause, which cause must be removed before proper natural strength can be restored. For instance, a man who is troubled with rheumatic affection, who has been cold and wet, may feel weak and aching; there is not much pain about him, but he has no energy or strength. But to say that his complaint is mere weakness is a mistake. He has taken cold and is rheumatic. Excessive quantities of wine or food will not restore his strength; but cure the rheumatic difficulty, and the "debility" is cured also. So of very many other ailments. Seek for the real cause, apply the proper remedy, and the strength will be restored.

Deafness.—In most cases deafness follows the ear-ache, caused by inflammation of the organ of hearing. Sometimes it is the nerve of the ear that is affected; or, it is inflammation of the drum or lining membrane, and again the eustachian tube may be the part attacked. Generally, deafness happens from inflammation of the ear, but is sometimes caused by concussion. Deafness does not always follow inflammation of the ear. Children frequently are troubled with this ailment, and the ears discharge matter, without diminution of hearing; but it sometimes happens that the hearing is thus entirely destroyed. The glandular structure in the ear which secretes the wax becomes disordered sometimes, which occasions a dryness and heat in the ear. Warm water, in which there is a little castile soap, syringed into the ear, is beneficial in this case. A weak solution of sugar of lead, or of white vitriol, in rain water, washed into the ear with a rag or thrown in with a syringe will abate the heat and reduce the inflammation. If the nerve is affected, a mixture of sweet oil and the water of ammonia, in the proportion of four teaspoonfuls of oil to half a teaspoonful of ammonia, may be used by dropping a few drops into the ear, or applying the mixture upon a dossil of lint or wool. The dryness of the ear and the hardness of the wax may be remedied by either; and laudanum and the spirits of camphor are serviceable in quickening the hearing. Bathing the ear with cold water, in cases of deafness of long standing, has often been attended with success in restoring the hearing.

Diabetes.—The chief remedies in this disease are such as will restrain the action of the kidneys. For this purpose, alum, sugar of lead and the white vitriol are beneficial. Powdered alum, in bulk about as large as a common pea, should be swallowed in molasses or syrup, four or five times a day. Light doses of sugar of lead, or of white vitriol, taken about as often as the above, may also be found a remedy. Oak bark tea and poppy tea are likewise beneficial.

Dropsy.—Exercise and the due regulation of the quantity and quality of the food and drink are of the first importance in the prevention and cure of this complaint. Exercise assists the vital powers in moving the blood and promoting regularity in the system. Perspiration is increased by it, and thus is diminished the accumulation of water in the dropsical part. The circulation of the blood and the absorption of water may be quickened also by friction or rubbing the dropsical part. Purgatives and diuretics are the most effectual medicines in the treatment of the dropsy.

Dysentery.—While this disease is so common, few, perhaps, understand that it arises from an inflammation of the inner coat or mucous membrane of the bowels. It is the most common in the Summer and Fall, and the hotter the weather, generally, the more productive it is of this disease. It should never be neglected. In children it will generally yield to a mixture of oil and laudanum, or paregoric. A child of one year may take a tablespoonful of castor oil mixed with four drops of laudanum, every day, until the complaint is cured. The opiate allays the pain, and the oil clears the bowels thoroughly. When physic is given with opiates it is longer in operation than when taken alone. This should be borne in mind. If the first dose does not produce the desired effect another may be given in eight hours. Sometimes, in cases of dysentery of children, the disease cannot be subdued by cathartics. A grain or half a grain of ipecac., given once in four hous, will often relieve the pain and evacuate the bowels. Fomentations are almost always beneficial in this complaint, as they excite perspiration and have a tendency of bringing the blood to the surface. Cloths dipped in hot water, or infusions of pennyroyal and other stimulating herbs, may be applied to the abdomen.

Drunkenness.—The most charitable, and, at the same time, the truest view of this misfortune is, to look upon it as a disease, and to treat it as such. The appetite becomes so ungovernable in the advanced stage of inebriety that the person will pursue drink at any and every cost. Reputation, property, and the comfort and welfare of one's family, are all sacrificed to gratify this destroying appetite. The only hope for confirmed drunkenness is in avoiding, on system and on principle, the occasion of temptation, the places where liquor is sold, and those who will urge it on one. The best place for such a person is in a Washingtonian Home, or Retreat for Inebriates. It is the experience of these institutions that the sudden and complete discontinuance of the stimulants is less inconvenient, less painful, and less difficult to the patient than the "tapering-off" system. Bromide of potassium and other medicines are useful in allaying the painful sensations of the first days of abstinence from liquor, or until these sensations subside.

Dyspepsia.—Dyspepsia, or indigestion, to be fully understood, requires a pretty accurate knowledge of the human stomach and its functions. It is not intended, here, to describe this delicate and important structure, or what is required for the performance of its office in a proper manner, for it would require too much space, and besides, it is not necessary for the purpose in view. One thing will be readily admitted—that in order to the proper digestion of food, the stomach must be strong and well. The veins and arteries of this organ must be supplied with good blood, and its nervous power should be healthy. Nothing is plainer than this: that if men weaken their stomachs with excessive work—that is, with superabundant meals when they are tired and exhausted—digestion will not go on well. If they take very little exercise, they will not have good red blood; and if they worry themselves, their nerves will be weak and powerless; the nerves of the stomach will also be weak, and neither appetite nor digestion be right. The sufferings from dispepsia, when it has reached an advanced stage, are sometimes frightful.

The principal causes of indigestion are want of exercise, fresh air, drinking spirituous liquors to excess, the use of tobacco too freely, mental depression, etc. In its treatment it is of primary importance that if there is anything obviously wrong in the habits of the patient, calculated to produce dyspepsia, he must discontinue it. Sometimes it is the excessive use of strong tea, or the inordinate use of tobacco, or alcoholic drinks; if any improvement is to be expected, these must be discarded. The use of pastries, rich puddings and sweatmeats are injurious. In the beginning of the disease, especially if the symptoms are mild, there is no necessity for taking a great deal of medicine. A judicious diet—an alteration of the quantity, variety, and quality of the food—a sufficiency of sleep, cessation of dissipation, a goodly amount of exercise, regulating the bowels with some mild purgatives, correcting the acidity and wind on the stomach with a few alkalies and carminatives,—these only are necessary to bring the stomach back to a healthy condition. If the case has gone on for some time, or become chronic, the best thing to be done is to consult an experienced, reliable physician.

Dimness of Sight.—Sometimes this condition of the eyes is called amaurosis, and is supposed to be a paralytic affection of the optic nerve. The remedies usually employed in this affection are electricity, galvanism, and pungent snuffs. A vegetable diet should be adopted, and a great deal of exercise taken.

Epilepsy—A fit of epilepsy is very much like apoplexy, but in the latter there is little or no convulsions, whereas in epilepsy the limbs, muscles and other organs are violently convulsed. It is evidently an affection of the nerves, but from what particular state of the brain or nerves it arises, is not easy to perceive.

In the domestic treatment of a fit of epilepsy, the patient should be exposed to the air where it is neither hot nor cold, but of medium temperature, and cold water should be dashed with considerable force upon his face, neck and chest. Vomiting or an operation of the bowels, or a flow of the urine nearly always dispels the fit and stops the convulsions. A teaspoonful of ipecac. mixed with warm water may be given. Mustard poultices should be applied to the feet, and the body, and the stomach gently rubbed with the hand. A teaspoonful of the spirits of camphor mixed with a little cold water, or a swallow of wine will often help very much to revive the patient after he has come out of the fit.

When a person has had several attacks of epilepsy, every kind of business or study which is calculated to disturb the mind or occasion anxiety must be abandoned, at least until a cure is effected. Employment in the open air, and an abstemious diet, principally of vegetables, is essential as the basis of a cure.

Erysipelas.—The best external application for this disease is alcohol. In the commencement of the disease, a tablespoonful of cream of tartar should be given to operate on the bowels; then when this has been effected, eight grains of sal nitre may be given and repeated every three hours if the fever is severe. One of the most cooling drinks which can be given is the acetate of ammonia, or lemon juice and the salts of hartshorn. Cold water is the best common drink in this disease; food, the same as in other fevers. The inflamed parts should be kept constantly wet with alcohol and tepid water to cool them; wash away the matter discharged from the minute vesicles which are constantly bursting, and prevent the disease from spreading. Flour and other farinaceous substances are beneficial, by absorbing the watery matter and protecting the diseased surface from the air, and by some are preferred to liquid applications.

Earache.—(See Deafness.)

Faintness.—This condition arises from loss of blood or other sudden depletion, or after a person has become weakened by disease; or it may result from some organic or functional disease of the heart. Where it results from other disorders and affections, the remedies must be directed to the cure of the primary causes.

Flatulence.—Wind in the stomach and bowels. It arises generally from dyspepsia, and the remedies for its cure will be found under that head. See also, Colic.

Goitre.—A fleshy tumor upon the front portion of the neck. Lead and mercurial plasters are usually employed to reduce them. Rubbing with camphor, opedeldoc, and other stimulating remedies, and iodine taken internally, are recommended. These tumors, though unsightly, are commonly harmless.

Gout.—Attacks of gout usually occur in the feet. Immerse the feet in hot water about the temperature of eighty-five or ninety, and soak them an hour at a time, then wrap them in warm flannel. The spirits of camphor and laudanum constantly applied to the part affected often gives relief. A warm soft bread, or flax seed, poultic· is highly spoken of.

Gravel.—Consult a physician, for the symptoms may be such that immediate medical skill is required to prevent serious trouble. When a gravel stone drops from the kidneys large enough to block up and distend the duct which leads from the kidneys to the bladder, the urine is obstructed and the most excruciating pain is caused. After the gravel reaches the bladder, there is a cessation of pain until a stone is formed by the collection and adhesion of the particles together, sufficiently large to interfere with the free passage of water.

The deposit of grit or sand in the kidneys has not yet been satisfactorily explained, but it appears to be owing to the imperfect secretion of urine. This secretion always contains a sediment, or settling of a reddish color, and this, when dried and examined chemically, is found to consist of like ingredients with the stones in the bladder. Acids, alkalies and earth exist in the urine, and when they exist in proportions, they concrete, no doubt, into sand, gravel and stones, and produce this disease. The healthy secretion of the kidneys contains no less than seventeen different chemical principles.

When this disease is present, the water, when passed, shows little sandy particles in the sediment. More or less blood is sometimes voided, the water is high-colored, being of a high red or dark brown color—an evidence that the blood vessels have been lacerated by the sharp points of the gravel. If the obstruction is continued for any unusual length of time, there will be heat, thirst, dryness of the skin, uneasiness, loss of sleep, a quickened pulse, and finally, if not relieved, an intermitting pulse, convulsions, mortification, ending in death.

Sometimes this disease attacks those who are afflicted with it at short intervals, and again it may be several years between its attacks.

The domestic treatment of gravel consists in a few simple remedies, and an abstemious diet. Beyond this, as remarked in the outset, it is best to seek medical aid. While the disease is confined to the kidneys and ureters, and only small gravel or sand are formed in the water, a vegetable diet and an active occupation will generally effect a cure. Rain or spring water should be drank in preference to well water, as the latter always contains more or less earthy or mineral particles, which may induce or aggravate the difficulty. But chalybeate mineral waters, containing iron in solution, are still better if obtainable. They are often completely efficacious in curing this disease. Sometimes the cathartic mineral waters are quite as effectual as chalybeate water.

In case the disease comes on with much pain in the back, sick stomach, vomiting, fainting, suppression of the water and great distress in passing it, a dose of laudanum or morphine may be given. For an adult, thirty drops to a teaspoonful is proper; for a child, from three to ten drops. After the opiate is given, the warm bath is recommended, and the patient should drink copiously of warm rain or spring water. Parsley tea is highly spoken of. A tumblerful, in which a teaspoonful of the sweet spirits of nitre has been put, should be drank every hour.

Another good medicine in this disease is a tea made of bear's berry, or uva ursi, or upland cranberry. A tumblerful, in which a teaspoonful of cream of tartar has been dissolved, drank every hour, relaxes the kidneys and causes the urine to flow freely.

One medical authority states that the garden leek sometimes affords great relief. "Take a handful of the root or fibrous parts, with a few sprigs of fennel, and boil them in two quarts of water, over a gentle fire, until the half is evaporated; then pour off the remainder, strain it, and drink about a pint a day. A steam raised about the lower part of the back and abdomen by the use of cloths dipped in hot water, or boiled herbs, tends to relax the urinary ducts and to hasten the passage of the gravel. * * * Lemon juice, mixed with the salts of hartshorn, and drank in a state of foaming is a cardinal remedy in an attack of the gravel. A teaspoonful of the powdered salts of hartshorn may be stirred into a great spoonful of lemon juice and two great spoonfuls of water. This forms the acetate of ammonia or spirits of minderus."

The acids are used as remedies, and are employed to neutralize the earths and alkalies that are predominate in the urine. It may be, however, that the formation of stones and gravel arises from a predominance of an acid in the urine called the uric acid: in that case alkaline remedies are to be employed. A weak lye made of wood ashes and drank two or three times a day, is a good remedy. Ten or fifteen drops of the water of ammonia in a tumbler of water, drank every two or three hours during the day for two or three weeks, has been found to destroy the tendency of the urine to concrete gravel.

Heart Diseases.—These generally must be treated by a skillful physician. The only complaints which will be mentioned here are Palpitation and Heartburn.

Palpitation may arise from various organic affections of the heart, such as dropsy, aneurism, and ossification of the valves, but the most common cause is a delicate, weak state of the nerves. To effect a cure of palpitation, implies the cure of the local affection producing it, whatever it may be. Remove the cause and the cure is accomplished.

Imaginary fear often produces this affection. In this case a few drops of laudanum, or a teaspoonful of paregoric, are useful. Thirty drops of the water of ammonia, or a teaspoonful of the spirits of camphor or ether are recommended. A copious draught of poppy tea will have a similar effect. Sometimes this affection proceeds from an overloaded stomach, in which case an emetic may be given followed by a cathartic.

Heartburn is a symptom of dyspepsia. Calcined magnesia, a few drops of the water of ammonia, or a little piece of crude soda dissolved in water, will correct the acidity and quiet the pain.

Insanity.—"This disease," as one author very sensibly says, is one "which people are never looking out for, as they are for other diseases, and of course no means are ever thought of or used for its prevention. And yet, perhaps there is no disease where the causes in general are better known or easier avoided. It is a calamity which no one wishes to think of, much less to make any provision for. But it is one of the diseases of the human body and as certain to occur as any other disease. Like other diseases it is produced by the general wear and tear of the human body."

The cure of the disease largely depends upon rest of the mental operations by sleep, replenishment of the blood vessels, an increase of flesh, and of the body in general, and a re-establishment of strength. When the nervous system acquires its original strength and soundness, the mental operations become right and sound. Where it is possible, a person attacked with this disease will more speedily recover if placed in an institution for insane persons, under the care and direction of persons who are competent to treat each patient as his or her particular case requires.

Jaundice.—In this complaint the bile is diverted from the bowels, and is absorbed by the lymphatic vessels or the secretory terminations of the veins, and diffused throughout the system. The treatment, in the commencement of this disease, generally consists in relaxing the system sufficiently to produce a permanent flow of the bile by the use of an emetic, repeated every other day for a week or fortnight. In the first instance, half a drachm of ipecac., or fifteen grains of the powdered leaves of lobelia, may be used. After one or two doses (taken as above directed) is is better, probably, to use a solution of the tartrate of antimony as an emetic, for the reason that it acts more effectually upon the billious ducts, than the ipecac., or lobelia. Some physicians highly recommend thoroughwort as a remedy for jaundice. Two cup-fulls should be drank at a time, and taken every day for a week at least. If the motions are free, no other medicine is needed while the thoroughwort is being used. Another remedy recommended in this disease is the inner bark of the bayberry root steeped in cider. The diet should consist of green vegetables as much as possible—asparagus, spinage, lemons, oranges, and wild berries. Horse-radish and pepper-grass are highly beneficial in this disease. The yolks of eggs mixed with sugar and taken as daily food, are also highly extolled.

Kidney Disease.—Under other heads some of the complaints to which the kidneys are subject have been already mentioned in this work. It is here merely intended to allude to what is called "Bright's Disease," and to urge a person whose symptoms indicate its presence to seek the aid of a skillful physician. These symptoms are transient pains in the back and loins, a gradual failing of strength, a dryness and pale or bloodless appearance of the skin, thirst, nausea, and sometimes drowsiness, and albumen in the urine. The general treatment of the disease does not differ materially from other acute inflammations of the kidneys.

Lung, Inflammation of.—This disease requires the attention of a physician. "When it is properly treated and uncomplicated, and when no untoward circumstance attends it, the disease is seldom protracted beyond the seventh or eighth day before symptoms of a crisis will be manifest, but should it exceed this time and become chronic, it may be prolonged indefinitely."

Sometimes there is a fatal termination in a few days, and therefore prompt and efficient treatment is imperative. It is too violent and unyielding to yield to domestic treatment, and though some good may be done by bathing the feet in hot water, applying hot poultices to the side, and giving warm, mucilaginous drinks, professional medical aid is indispensable to conduct the diseaee through its course successfully.

*Lumbago,*is a rheumatic affection of the small of the back. Rest and inducing free perspiration will generally afford relief. Flannel should be worn and the body kept warm. Volatile liniment mixed with a teaspoonful of laudanum should be applied to the back. A plaster of shoemaker's wax applied over the soreness will aid in curing the complaint.

Menstruation.—When there is irregularity, retained or obstructed menses, a tea made of the tops and leaves of savin, drank in a sufficient quantity to raise a perspiration for several days, has been found highly beneficial. A tea, also, made of the red centuary, brewed strong, and drank hot copiously, every hour or two, so as to produce a sweat, is an excellent remedy. The tansy is another article of of tried virtue in this difficulty. Rue promotes the circulation in the whole system, and is especially useful for this trouble. An ounce of it should be steeped in a pint of boiling water, and a wine glass full taken several times a day.

Mumps.—The patient must stay in the house, the body be kept warm, a dose of paregoric given, and hot herb teas employed to produce sweat. A clean woolen stocking or piece of flannel should be worn around the neck. No stimulating food or drink should be given. If the case becomes severe, the swollen glands must be poulticed, or bathed with cooling applications.

Nails, In-growing.—In-growing nails are caused by pressure on the nail which is strong and round, and thus the edges are pressed downwards. The remedy is found in scraping the arch of the nail until it is so thin that it cannot resist the pressure; it flattens and becomes wider, thus affording relief.

Neuralgia.—This is a throbbing, darting nerveache, and acute soreness and sensibility; in the region of the face it is called tic doloreux. The proper remedies are narcotics and carminatives. Stimulants and tonics may be used as the nature of the case requires.

Palsy.—The same general treatment applies here as in apoplexy. In case where the disease commences with apoplectic symptoms, there will be more or less fever, and these must be obviated like those of fever in general. A dose of physic should be administered every day. This drains the bowels, lessens the pressure upon the brain, and prepares the nerves to resume their proper functions. Keep the skin clean with soap and tepid water. Exercise in the open air is very beneficial.

Piles.—Though generally not a dangerous complaint there is scarcely one which occasions more trouble, or more suffering in aggravated cases, than the piles. They arise from cositiveness, from intemperance in eating and drinking, strong purgatives, and an inactive, sedentary life. The very first thing to be done is to adopt a judicious diet and proper mode of living. A laxative diet is highly necessary, and the choice of food should be directed to this point. The food should be laxative and nutritious. If medicine is necessary, lenative electuary is highly recommended. A good laxative in this complaint is the cream of tartar in the dose of a heaping teaspoonful mixed with water, molasses, or syrup. All strong, drastic purgatives are to be avoided. Pills made of the extract of thoroughwort are beneficial in case of inward piles. If the complaint is obdurate, consult a physician.

Pleurisy.—Bathe the extremities in hot stimulating baths, and apply hot poultices and fomentations to the side. A solution of the tartar emetic in hot water is an excellent medicine in pleurisy. The dose should be large enough to produce nausea, and be repeated every two or three hours, according to its effect on the stomach. The object is depletion of the system, and active cathartics are necessary if the disease is obstinate. It is always advisable to call a doctor in this disease.

Rheumatism.—As local applications, chloroform liniment, cyanuret of potash, and tincture of arnica and laudanum are useful and often effective. A solution of cyanuret is made by dissolving two scruples or a drachm in a pint of water. Bathe the affected part with this, several times a day, and let a cloth wet with it remain on. Lemon juice, in doses of a tablespoonful in sugar and water, given four or five times a day, is employed in the treatment of rheumatism.

Scald Head.—Wash the head in warm rain water, or tepid spring water, and keep it clean. Weak suds of warm water and castile soap are recommended when the sores are large. The acrid discharge of the eruption must be washed off, and not be allowed to dry on the scalp. The hair should be cut off close to the head. Cooling applications should be first tried, and afterward, if a cure is not effected, those that are more stimulating. A salve made of half an ounce of red precipitate, an ounce of venus turpentine, and a teacupful of lard and applied to the sores regularly every morning after the scalp is cleansed, has been found very useful in curing this complaint. A dose of Epsom salts should be taken every morning, by an adult. Children may take a dose of the cream of tartar every other day, which may vary according to age. If the disorder runs badly, a little of lump magnesia finely powdered may be strewed on the eruption.

Small Pox.—The incipient symptoms of small pox, are fever, pains in the limbs and back, headache, vomiting, and pain or pressing on the pit of the stomach. When small pox has attacked a person nothing will cut it short or check its progress until it has run its course. It moves by fixed laws, and goes through its regular stages. But proper treatment is very necessary. Thousands of lives are lost every year from this disease which judicious care and ordinary intelligence in treatment, would have saved.

On the third or fourth day after a person is attacked, the pustules begin to show themselves upon the face, head and neck, appearing in little red spots. These rise and enlarge gradually, the eruption spreads over the whole body, into the ears, nose, eyes, mouth, and throat; the spaces between the pustules are red; the hands, feet and face swell, there is great difficulty in swallowing.

The pustules reach their full size about the fifth or sixth day, when they begin to suppurate. Before this period they contain only lymph or watery matter. Sometimes the disease is very light and the fever hardly noticeable; hardly any two people have the small pox alike. The maturation of the pustules is completed from the eighth to the eleventh day from their first appearance, and the sores discharge and form a dry crust which gradually dries and falls off. It is at this stage of the disease that it so often proves fatal. It usually takes from seventeen to twenty days for the disease to run its course.

When a person has been exposed to the contagion of the small pox, he should be vaccinated immediately. In many cases this will prevent the disease, and in all cases be likely to render it milder if the contagion has entered the system. A vegetable diet should be adopted at the same time; no heating or stimulating food or drink should be taken: cooling cathartics are advisable, taken every day in sufficient quantity to move the bowels.

When a person is attacked, cut his hair close to the scalp, place him in a cool, well ventilated room; the body should be sponged or washed with water, at least every evening, and cool drinks given. To prevent pitting, the light must be kept from the patient's face, either by covering it with a piece of some black fabric, say silk, with holes cut in it for the mouth and nostrils, or by keeping the room dark. To prevent itching, annoint the parts with sweet oil. Remember that the patient must be kept cool; the cooler the better without absolute chilliness. A mattrass is cooler than a feather-bed. If the head and face become greatly swollen, and the eruption thick and confluent, linen muslin dipped in a very weak solution of sugar of lead, or of white vitriol, should be laid upon them; and in case the agitation and distress are severe, some physicians give laudanum, or morphine, in a dose of forty drops for an adult, five drops for a child one year old, eight drops for one two years old.

Sore Throat.—In speaking of sore throat in this connection, reference is had specifically to an inflammation of the almonds of the ear or tonsils, the two little fleshy balls situated on each side of the entrance of the throat. The office of these glands is to secrete a quantity of mucus, which is discharged into the throat by twelve different ducts, to soften the food and prepare it for digestion. Inflammation of the tonsils is common among children in the spring of the year and the beginning of winter. Where the affection is slight, it is only necessary to keep the patient in a warm. dry room, to produce a gentle sweat by herb-teas, to drink flax-seed, slippery elm bark or mullein tea, and to gargle the throat with a weak solution of potash, or a solution of white vitroil of the strength of eye-water. In severe cases, an emetic of alum, ipecac., or lobelia should be given, and repeated if the case is obstinate. Warm water drank plentifully excites perspiration. Castor oil should be given to produce free motions. The diet should be very soft, or liquid vegetable food, such as rice, soaked cracker and bread, and water porridge. Hive syrup is a suitable medicine for children in this disease. A teaspoonful of this remedy given every two hours to a child one, two, or three years old, will produce a sweat, operate on the bowels, and reduce the action of the heart. Antimonial, powder in a dose of two grains for a child from one to three years old is also beneficial.

Scurvy.—The principal cause of scurvy is living too long on salt provisions. The disease is often aggravated among sailors by drinking putrid water. Fresh water is as essential in the cure of this disease as fresh food. Damp dwellings which are deprived of light and air, and which are cold and unclean, predispose the occupants to the scurvy; and if there is a lack of food, especially of wholesome meat and vegetables, the disease is certain to manifest itself. The surest remedy consists in a healthy diet, to supply the waste and exhaustion which has arisen from a lack of it. Sour drinks made from the juices of vegetables are among the most perfect antidotes of this disease.

Toothache.—No person should neglect the teeth. Their important office in masticating the food we eat has to do very largely with our health; they are highly necessary to perfect articulation; besides they constitute one of the most ornamental features of personal beauty. From these considerations no reasonable expense should be spared to keep them in good condition. The price of repairing the teeth has become so moderate that it is within the means of nearly every one to either have their teeth filled as soon as they manifest signs of decay, or if they have been neglected until too late to save them, new ones may be supplied at comparatively small cost.

The toothache proceeds from inflammation of the teeth or portions of the mouth with which they come in contact. It is sometimes driven away by a profuse sweat, produced by drinking hot herb teas, or other sudorifics. Twenty-five or thirty drops of laudanum, or morphine of like strength, for an adult, will generally ease the pain. A youth from twelve to sixteen years of age may take twenty drops; ten drops are sufficient for a child from eight to twelve.

local applications to the cavity of the tooth, the best are laudanum, strong spirits of camphor, the oil of cloves, and the smoke of the grated nutmeg drawn through a pipe. Creosote is often more effectual, applied locally, than any other remedy.

Ulcers.—Various kinds of ulcers afflict the body, arising from distinct causes. To effect a cure it is necessary to seek out the cause and eradicate it; but commonly an ulcer is understood to be an open sore not well disposed to heal. Good, healthy blood is essential to a healthy body, and in case of ulcers upon the surface or in the bones and tissues, it is important to renew the blood by the use of nutritious and unirritating food, as well as to adopt other measures to effect a cure. The diseased part should be soaked well with warm water every day and the acrid discharge thoroughly washed away. A drachm of the sugar of lead dissolved in half a pint of water, gradually increased, is highly recommended as a wash for old sores and ulcers. When they are slow in healing, they may be stimulated by some substance which will eat away the callous or fungous flesh; for this purpose the nitrate of silver, caustic potash, burnt alum, borax, and blue vitriol are employed. Astringents are used with benefit in some ulcerous sores. The sides of the cavity of ulcers should be drawn together as near as may be, by the use of sticking plaster. A vegetable diet is generally to be preferred; but persons obliged to labor, or who have been reduced by unwholesome diet, may eat moderately of more stimulating food.

Varioloid.—The small pox sometimes attacks a person the second time, and this second attack is called the varioloid. But it varies in its nature and symptoms, and hence its name. Compared with the small pox taken in the natural way, the varioloid is a mild disease, and it rarely proves fatal, unless by reason of neglect or stupidity in its treatment, which should consist of cooling and depleting means. A light diet, cool drinks, a cool, well-ventilated room, a moderate dose of salts daily. If the fever is high it may be well to draw blood from the arm. The sweet spirits of nitre, in a teaspoonful doses, once every two hours, should be given, or the sal nitre in six grain doses.

Vertigo.—Swimming in the head, dizziness; commonly a symptom of fever. If caused by a rush of blood to the head, bleeding is advisable; if from an overloaded stomach, an emetic is in order; if owing to bile in the stomach, vomiting should be produced by a dose of ipecac., or antimony.

Warts and Corns.—In the case of warts, perfect cleanliness, and rubbing them every night with common hard soap, and washing it off with warm water will often remove them. Touching them with blue vitriol, or lunar caustic, every day, generally removes them. A heated needle passed through them is a common remedy. Probably the best or surest remedy is aqua fortis — nitric acid — applied with caution. If used too freely or carelessly, unnecessary sloughing and inflammation may result.

Corns are caused by friction—the rubbing of the affected part upon the boot or shoe. Tight boots and shoes are the most prolific source of these excrescences. The best and safest way to cure them is to make a hole of the size of the corn in one or more pieces of wash-leather, spread with a plaster made of the semi-vitrified oxide of lead and olive oil in the proportion of one part of the lead to two of the oil boiled together: it is the diachylon plaster, much used in bruises, excoriations of the skin, slight surface inflammations, etc. The hole in the piece of wash-leather admits the corn and keeps it free from friction or rubbing, and allows it to heal. The top of the corn should be covered with a piece of the plaster. Corns are sometimes cured by frequently soaking them in warm water.

Wens.—There are some applications which have gained some repute in dispelling these painless tumors, but the only certain remedy is the knife. In removing them it is of the utmost importance to dissect out all the sac in which they are contained, otherwise, the wen is apt to grow again. The local applications referred to are such as contain muriate of ammonia, sea-salt, etc.

White Swelling usually appears in the knee-joint, though sometimes it may attack the ankle, wrist and elbow-joint. It is a hard, shining, glossy enlargement, generally very painful, though in some cases little pain is felt. In all cases it is of a white color. The progress is slow, years sometimes elapsing before ulceration and suppuration takes place; at length matter is formed in the joint and discharges through the openings. One ulcer succeeds another, until the strength, flesh, appetite and sleep of the patient are exhausted.

"The pain of this disease," (says a prominent medical authority) "can only be relieved by opium. The joint should be bathed several times a day with warm poppy tea. If the pulse is good, leeches should be applied to the extent of four or five dozen in the course of eight or ten days. The effect of steam should be tried upon it. Soft rye meal, flax seed, or white bread poultices, wet with laudanum should be employed between the times of bleeding. Volatile liniment, to which laudanum has been added, in the proportion of one of the laudanum to eight of the liniment, has been found a potent application. Equal parts of new rum and vinegar used hot is remarkably good as an external application. Blisters applied above and below the diseased joint have a tendency to remove the swelling and to ease the pain. Solutions of sugar of lead, and of white vitriol, salt and brandy, and sal ammonia, are among the most valuable external applications."

Where the white swelling does not yield to local applications, general medicines should be employed; and the advice and skill of a physician should be sought when the case requires such general treatment.

Whitlow.— Generally called felon. A painful inflammatory swelling. In superficial felons applications of lead-water, or solutions of zinc and alum, will be found effectual usually; but in deep-seated felons, leeches are applied, salts or other cooling medicines taken, a light diet adopted. In case the pain is severe a dose of laudanum or morphine will enable the person to procure rest at night. Relief is hardly possible until the matter from the felon has been released. The part may be opened with a common needle in ordinary cases, but if the inflammation is near the bone it will be well to have it lanced by a surgeon. Warm poultices before and after the felon is opened will be beneficial.

Water in the Head.—Dropsy of the brain, (usually confined to children under twelve years of age), requires the same treatment generally as dropsy of any other part. The medicines which are most effectual in cases of dropsy are purgatives and diuretics. The food should be light and nourishing, and exercise should be taken in the open air. Children attacked with dropsy in the head are pale and have an affection in the eyes, squinting with one or both; other symptoms are stupor, nausea, nervous sensibility to the light, cositiveness, intense pain in the head, and fever. The head should be shaved, and large blisters drawn upon it and kept running. When the head is hot and the fever high, it is advisable to apply leeches to the forehead and temples. The bowels should be operated on by strong purgative medicine.

Worms.—There are three kinds of worms which infest the intestinal canal, the tape worm, the round worm, and the pin or thread worm. Besides these there are two others which sometimes infest the bowels, *to wit*, the hair worm and the broad tape worm. It is not necessary in this connection to speak of them in detail.

While the treatment depends very much upon the kind of worm, it may be remarked that all bitter substances are poisonous to worms. For small children worm-seed is a good medicine. It may be mixed with molasses and given twice a day, a teaspoonful and a half of the seed is a dose for an adult. Thoroughwort tea or any strong physic will dislodge worms. Wormwood tea will destroy them. For the small thread worm a local remedy is the best in the form of an injection, as it comes directly in contact with the worms, and destroys them. The following may be used: Half a drachm of the tincture of perchloride of iron, and eight ounces of the infusion of quassia mixed. A sixth part of this may be injected into the bowels till the symptoms are removed. For the round worm take two or three grains of santonine for one or two nights followed next morning by a dose of castor oil. But this remedy should be given by a physician.

For the tape-worm, a very effective remedy consists of the following form: Oil of male fern half to one drachm; mucilage of acacia one ounce peppermint water one ounce; to be taken early in the morning, the stomach having been cleared by light feeding on broths, beef tea, etc., the previous day. A few days should intervene between the doses. Castor oil before and after this remedy may be given.

Womb Diseases.—The most general trouble in this organ is prolapsis uteri, or falling of the womb, and it is to this we refer in this connection. Its incipient symptoms are, bearing down pains and an uneasy sensation in standing and walking. Languor and inability to perform ordinary active duty are among the ills that follow this complaint. Its immediate cause is, as a general thing, weakness of the system induced by other diseases. Frequent miscarriages, profuse hemorrhages, the use of too much force in difficult labor, and too early and violent exercise after delivery, are not unfrequently the causes which produce it in married women; and unmarried women sometimes bring it on by jumping, dancing too much, and too great exertions of strength.

In the treatment of this complaint, the first thing to be done is to replace the organ in its natural position. A recumbent position must be assumed and the part crowded back as far as it will go, and then maintained in its place by a ball of sponge wetted with a weak solution of white vitriol. This should be renewed three or four times a day. The ligaments by which it is suspended must be strengthened, and to accomplish this, and restore the tone of the relaxed muscles, injections of lead water or of white vitriol into the vagina should be employed two or three times a day for a fortnight, or longer if necessary. To commence with, three grains of sugar of lead, or the same quantity of white vitriol, to an ounce of water, are sufficient, but may be increased in strength gradually.

If the patient is able to walk, and desires to be upon the feet a

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portion of the time, it will be advisable to procure and use one of the several kinds of instruments known as utero-abdominal supporters. Strengthening medicines and gentle exercise, fresh air out of doors, are all necessary to a cure of this complaint. Cold bathing is useful. Dissipation must be avoided.

DISEASES INCIDENT TO CHILDREN.

Reference has already been made to some diseases to which children are subject, but adults are liable to them also. There are certain ailments peculiarly incident to children, and to these our attention will now be directed.

Convulsions.—Convulsions, or fits, are not uncommon among young children, owing to the extreme sensitiveness of the nervous system. The organization of an infant is exceedingly sensitive. In no small degree the great mortality among children is attributable to the shocks to which they are liable, and oftentimes by reason of the ignorance or stupidity of those who have the care of them. The sensitive organization is capable of being injured by many things, especially by improper food, by bad air, by cold, and by heat. It has been well said, that it would be far better if people would regard the constitution of a child as a thing requiring great consideration and care.

The most common causes of convulsions or fits in children are teething, worms, or some error of diet. Very frequently, the food may be unsuited to the wants of the child, or, the stomach may be gorged. Prolonged diarrhœa sometimes exhausts a child until convulsions are thus brought on.

When a child is attacked with convulsions, and no physician is at hand, the first things which it is generally right to do are to admit plenty of fresh air to the child's face and mouth, and to put it into a warm bath in such a position as to give it plenty of air in breathing; or apply cold water to the head, and hot cloths, dipped in hot mustard and water or turpentine, to the feet and lower part of the legs, till the skin is quite reddened. While this is being done, have one or two or three teaspoonfuls of syrup of ipecac., or mustard and warm water ready, and watch for an opportunity to get a sufficient quantity down the child's throat so as to produce vomiting. Perhaps in the intervals of the fits, vomiting may be excited by tickling the mouth with a feather, or the finger. Should the child be in an exhausted state from previous diarrhœa or other causes, a little simple food may be introduced, or breast milk of fresh milk and water, or barley water, or a little very weak brandy and water sweetened with sugar. In the actual fit, the child will not be able to swallow. If vomiting is produced, probably a long sleep will succeed. And then, if the cause of the fit has not been definitely ascertained, time will be yours to try and find out what has occasioned it. It is seldom, however, that the cause is not apparent. If convulsions arise from teething, lancing the gums may be needed (in which case a doctor will be required); if from the stomach, an emetic or purgatives may be necessary; if from worms, the treatment heretofore indicated under that head; or it may be the head that is the cause; if so, a medical man's advice should be obtained. It is always better to prevent a disease, if possible to do so, than to be obliged to attempt its cure. To preserve children from the causes of their ailments, and to strengthen them, should be the first to concern those who have the care of them. Fits in children imply a morbid sensitiveness, which is often constitutional. This sensitiveness, and with it the chance of fits, is diminished by good food, pure air, plenty of sleep, and regular living on the part of the parent.

Diarrhœa.—This complaint is the cause of much mortality among children, especially the very young. In many cases where it is not fatal it often seriously injures the system. If the domestic remedies here given fail of producing benefit, medical aid should be called. If a child affected with diarrhœa looks pale, and its skin is cold and clammy, and if it lies with its eyelids half closed, it must have close attention.

A writer on domestic medicine, in a popular English work, says of this disease: "The diarrhœa of children may be divided into two classes: First, that which occurs in very young children in the first few weeks of its life. Second, that which occurs in children about and after the age of six months, during the period of teething. Both of these forms of diarrhœa are most apt to occur and most difficult to cure during Summer and Autumn.

"1. The diarrhœa of very young children generally depends on errors of diet, on artificial food, or on something faulty in the milk of the mother. The motions of the child are generally green in color, and frequently passed. The child cries much, or gives other signs of uneasiness in the bowels. Very often, some degree of vomiting exists along with this diarrhœa. Such a case as this is eminently one for good domestic management. It is impossible to lay down rules that will suit every case; but wise women will find out what food agrees with a child and what seems to poison it. This kind of diarrhœa is often seen in children that are fed with the bottle or in other artificial ways. And it is wonderful how such children will often improve when a wet nurse is obtained for them. The green motions become yellow; the wrinkled skin looks plump and fresh again, and the expression of the face alters from an aged, haggard look to a happy, well-fed appearance. Where a wet nurse cannot be procured, the best artificial food should be given, and of this, generally speaking, the best is that which is made of milk and water in equal proportions, or in the proportion of two thirds milk to one third water. It should be sweetened with a little sugar and given at a temperature of 90 or 95 degrees Fahrenheit. It is of the greatest moment that the milk should be free from all acidity. In the way of domestic medicine, a teaspoonful of lime water may be given mixed with the food, or a teaspoonful of the following mixture may be taken three or four times a day: chalk mixture, six drachms; water, six drachms; bicarbonate of soda, six grains. Where this diarrhœa depends upon any temporary fault of the mother's health, this must be rectified by appropriate means, especially by simple diet and quietness of mind. If the diarrhœa is not quickly removed by domestic care and treatment, medical advice should be taken on the subject.

"2. Diarrhœa of Teething Children.—Many children never cut a tooth without having some diarrhœa. If it continues long, or if it is associated with vomiting, or if the child is getting obviously thinner, then it should be regarded seriously, and the doctor should be sent for. The domestic treatment of it will consist in the most careful regulation of the mother's living, favoring good milk on her part; where the child is brought up by hand, the treatment will consist in giving suitable food, especially milk, as above directed. If this produces vomiting, then give barley-water, or barley-water and milk, until the stomach settles a little. If the child is very much exhausted, then a little brandy and water, very weak, may be administered. For example, a teaspoonful of pale brandy may be put into a wine-glassful of water, and sweetened; of this a teaspoonful may be given frequently. If the motions are green, and the skin hot and dry, two teaspoonfuls of the above chalk mixture may be given every three or four hours.

"When diarrhœa attacks children older than a year or two, it should not be checked immediately, especially if it has followed close upon some obvious error of diet. It may even be proper in this latter case to give a very small quantity of castor oil. If the diarrhœa continues, then the above mixture may be procured in twice the quantity, and a dessert-spoonful, or a table-spoonful, given every three or four hours."

Inflammatory Diarrhœa.—Sometimes, particularly in young children fed with the bottle in unhealthy large towns, diarrhœa resists all remedies, and changes its character; the motions losing altogether the appearance of ordinary motions, becoming green and sour, consisting largely of slime, perhaps mixed with a little blood; sometimes they resemble spinach or chopped vegetables. Vomiting is apt to set in. The little patient gets very pallid and thin, and its flesh soft and flabby. The case is not one now of simple diarrhœa; it requires the best medical skill, and should at once be removed from the sphere of domestic medicine.

Teething.—Teething, though a natural process, is often accompanied with ailments which seem to be incidental to it. Of these are diarrhœa, bronchitis, convulsions, etc.; their treatment is elsewhere given in this work. During the process of cutting its teeth, the child is very sensitive, and should be preserved from extremes of heat and cold. It should be fed regularly, and the diet should be very simple, and adapted to its requirements. When a tooth is obviously pressing on the gum, and the gum is swollen or red, and the child is disordered in any way, no objection should be offered by parents to having the gum lanced. The relief afforded by this measure is often very marked.

Canker, or Thrush.—There are several varieties of this disease of the mucous membrane. The variety here meant is commonly called baby's sore mouth, and generally makes its appearance in the course of the second or third week. Its presence is first indicated by the appearance of white spots in the mouth, which run together and completely line the mouth with a substance having the appearance of curdled milk. When the disease is severe, the crust is of a brownish color, and extends over every part of the mouth and throat. In the course of a few days this substance is cast off, leaving the tongue and mouth somewhat redder than usual, but usually it returns two or three times before the child finally recovers. The usual remedy is borax and honey, but a much better one is equal parts of borax, salt-petre and loaf sugar, rubbed well together. Put a small pinch of this into the child's mouth three times a day. It should be kept in a dry place. Another specific is made by dissolving a quarter of an ounce of chlorate of potash in two-thirds of a tumbler of warm water. Use this as a mouth wash.

Chicken Pox.—The eruption of the chicken resembles that of the small pox, and is sometimes mistaken for it; but the pustules of the chicken pox never contain matter like the small pox, and when punctured emit nothing but a watery fluid. Medicines in this disease are, as a general thing, quite unnecessary. Perhaps a dose of Rochelie powders, a little ipecac., in grain doses, or a solution of nitre, to abate the fever. The drink should be cold, and the diet light.

Cholera Infantum.—Severe vomiting and purging are the symptoms of this disease. It is of short duration, terminating either in health or in dissolution in a few days; often in a few hours. It is to the infant what cholera morbus is to an adult, the age of the patient being the only distinguishing characteristic between them. In the early stage of cholera infantum there is an accumulation of heat in the bowels and stomach, and in the hands and feet. This is succeeded by vomiting or purging, or both, and by griping pains in the intestines, short breathing, a sudden loss of heat, prostration, a quick, feeble pulse, and thirst; then a cold perspiration comes on. In fatal cases, after the natural heat is lost, the patient becomes weaker and colder by every discharge, until death occurs.

To allay vomiting, strong poppy tea may be given every ten or fifteen minutes, and if this does not stop it, follow with a dose of paregoric or laudanum. "The dose of laudanum for a child one month old, may be one drop; for a child three months old, two drops; for one of six months old, four drops; for one a year old, five drops; for one two or three years old, from eight to ten drops. This dose may be repeated every two hours until the stomach and bowels are tranquilized."

If the stomach refuse the laudanum, twice the quantity named for each dose may be given by way of injection. Use it in a tablespoonful of flax-seed tea, or some other mucilage. "If the discharges are principally downward, it will be best to give the opiate by the mouth; but if they are chiefly upward, it will be advisable to give it by injection. Warm flannels should be applied to the surface of the body, and warm tea of poppy heads applied to the pit of the stomach. If these cannot be had, ten or fifteen drops of laudanum or morphine may be applied. As soon as the stomach is quieted, a dose of calcined magnesia as a laxative should be given. A mustard poultice or hot brandy may be applied to the stomach. A few teaspoonfuls of peppermint, cinnamon, ginger, or tansy tea will often assist in settling the stomach."

Sometimes, in protracted cases, a blister drawn upon the stomach is beneficial. The disease is sometimes checked in the hot stage, before vomiting has commenced, by administering an emetic.

Croup.—This dreaded disease consists of inflammation of the upper part of the wind-pipe. The period in which children are most subject to it is from two to five years of age. It is a complaint that demands immediate attention, for if neglected it may prove fatal in one or two days. The disease comes on suddenly sometimes, and usually commences with a short dry cough. The difficulty of breathing increases rapidly, and soon becomes distressing; the face is flushed, and there is a peculiar sound in coughing and breathing. As the disease progresses the coughing fits become more distressing, great effort is required for the child to inspire a full breath of air, the tonsils and palate will sometimes, though not always, become red and swelled; there will be some redness all around the entrance to the throat, and sometimes the false membrane, which forms in the windpipe, may be seen. The child fights for breath, and will often rise up suddenly to catch his breath, and in agony dash its head against the pillow.

This disease will sometimes terminate fatally in twenty-four hours, but children frequently live until the fourth or fifth day. Coughing up considerable quantities of membranous film, while it may afford temporary relief, does not afford any permanent ground for recovery. The inflammation sometimes involves the bronchia and lungs, in fact the whole breathing apparatus.

In the early stage of croup, domestic remedies may arrest the disease, but we advise sending for a doctor when a child is attacked. The general treatment — and it is the best — is to give the child an emetic. Syrup of ipecac., in a dose of one or two teasoonfuls, every fifteen minutes, and warm water to drink, until vomiting is produced, should be given. It is the opinion of some phyicians, that the best emetic which can be given to a child in the croup is the powdered alum. Give a heaping teaspoonful mixed with molasses or honey, every ten minutes, until the child vomits freely. The alum acts upon the salivary glands, inducing profuse pouring out of saliva, instantly promoting the secretions of the throat and filling the mouth with a watery mucus. Sometimes it operates upon the bowels, but it is much less likely to prove cathartic than antimony or ipecac. The latter is always a safe remedy, but not always powerful enough, in this disease. Lobelia, in teaspoonful doses of the infusion, is also an effectual emetic. These emetics should be repeated at intervals until the disease is subdued. Put the feet into hot water and mustard, when the disease is discovered, till the skin is quite red, and a good large poultice made with two parts of oatmeal or bran and one part mustard, well up to the throat, and keep it on till it reddens the skin.

One of the means used to relax the system and subdue the inflammatory action is a plaster of snuff and hog's lard. A teaspoonful of common yellow snuff, mixed with a little lard, and spread upon a rag, composes this plaster. If it makes the child very sick at the stomach, and the effect continues long, it will be advisable to remove it till the sickness subsides. Give, as drinks, flax-seed tea or some other mucilaginous fluid, and gruel.

False or Nervous Croup.—This is a nervous disease and not an inflammatory one. It is characterized by a sudden difficulty of breathing, and the breathing is accompanied by a loud crowing sound, from which the name of "child-crowing," is derived. It usually occurs in children between the ages of six and nine months. It is not attended with fever like true croup, and comes on and goes off suddenly. A warm bath should be given, and a medical man summoned. If a tooth is pressing on the gum it should be lanced, for this may be the cause of the difficulty.

Whooping Cough—This is an inflammation of the windpipe, as proved by the quantity of phlegm secreted, which could not be prodcued by spasms. At first it is difficult to distinguish the whooping-cough from a common cough or influenza. Sometimes two weeks will elapse before the whooping sound will be heard. When the whooping begins nearly every fit of coughing is attended with symptoms of strangulation. The convulsion in coughing is sometimes so very severe that the breath will be lost for a time, and the face, lips and neck will turn purple, and the eyes will be very much swelled. Quite often the fit of coughing is cut short by vomiting. A tough, hairy, phlegm is usually brought up by every fit of coughing, and this is very beneficial when thrown out, as it relaxes the windpipe and lungs and promotes the secretion of the mucus.

The treatment of whooping cough should be much the same as in a severe case of influenza or bad cold. Emetics, expectorants or medicines which loosen the phlegm, must be used. The syrup of squills and castor oil in equal parts given every day as long as the cough is violent, is an excellent remedy. The tincture of lobelia may be employed as an emetic, or in smaller doses as an expectorant, and is a very good medicine in this disease. A light diet is required and care should be exercised to guard the child against extremes of heat and cold.

Another remedy recommended is alum. Three or four grains may be given to a child a year and a half or two years old, every four or six hours, in water. It is most likely to be useful in cases in which there is a great accumulation of phlegm.

Cold.—This is the common name applied to influenza. In most cases it is only necessary to remain in-doors a few days, adopt a vegetable diet, and take warm drinks such as flax-seed, mullein, or slippery-elm tea, to produce a sweat.

PRESERVATION OF HEALTH.

In perusing the preceding pages of THE HOME GUIDE, the reader will hardly fail to discover that the object in view is not alone to give information upon practical questions of every-day life relating to the *home*, but also to furnish suggestions, hints and facts calculated to prevent sickness and disease, or, in other words, to promote health. In all departments of the work, it will be seen that the preservation of health is kept in the foreground; and while the departments specially devoted to domestic medicine will be found a guide in cases of accident and sudden illness, the prevention of disease is much better than to be obliged to attempt its cure. The old adage, "An ounce of prevention is worth a pound of cure," contains a golden truth. How infinitely better is it to *preserve* health than to *recover* it! Miss Martineau uttered a grand thought, which only ignorance and bigotry will gainsay, when she wrote :—"If half the thought and sentiment that are spent on the subject of death were bestowed on the practical duty of strengthening, lengthening and ennobling life, we should be more fit to live worthily and die contentedly."

It is true, doubtless, that people are becoming every year better acquainted with the laws of life. More attention is being paid to hygiene—the department of knowledge relating to the preservation of health, embracing man in a state of health. But, after all, how little do people generally seem to regard all those influences by which health is affected, such as diet, air, exercise, dress, sleep, labor, and mode of living. If we would live out the years allotted to man by the Psalmist, or the period intended as the measure of human life by the Creator, we must know more of the laws which affect our being. It is common to say, when our loved ones are cut off prematurely, that it is the will of Providence. God's providence does not recognize such untimely deaths except as the result of violated laws, or our ignorance of the intricate and delicate mechanism of the human system and its various functions. Man was made in the image of his Creator. This wonderful creation was perfect in all its parts. Sickness, disease, suffering, death out of time, result from our degeneracy by reason of ignorance, or sins of commission or omission within our knowledge. To illustrate the criminal folly which is prevalent, and at the same time show the fallacy of charging our frailties upon Divine Providence, the following, by an anonymous writer, is in point:-

"Take, for example, the young girl, bred delicately in a town, shut up in a nursery in her childhood, in a boarding school through her youth, never accustomed to air or exercise—two things that the law of God makes essential to health. She marries; her strength is not adequate to meet the demand upon it. Her beauty fades early 'What a strange providence that a mother should be taken in the midst of life from her children!' Was it Providence? No! Providence has assigned her three score and ten years, a term long enough to rear her children, and to see her children's children; but she did not obey the laws on which life depends, and, of course, she lost it.

"A father, too, is cut off in the midst of his days. He is a useful and distinguished citizen, and eminent in his profession. A general buzz rises on every side of 'What a striking Providence!' This man has been in the habit of studying half the night, of passing his days in his office and the courts, of eating luxurious dinners, and of drinking various wines. He has every day violated the laws on which health depends. Did Providence cut him off? The evil rarely ends here. The diseases of the father are often transmitted, and a feeble mother rarely leaves behind her, vigorous children.

"It has been customary in some of our cities for young ladies to walk in thin shoes and delicate stockings in mid winter, A healthy blooming girl thus dresses in violation of heaven's laws, pays the penalty—checked circulation, cold, fever, death. 'What a sad Providence!' exclaim her friends. Was it Providence or her own useless and sad folly?

"A beautiful young bride goes night after night to parties made in honor of her marriage. She has a slight sore throat, perhaps, and the weather is inclement; day by day her shoulders are loaded with furs, but on these occasions she must wear her neck and arms bare; for who ever heard of a bride in a close evening dress? She is consequently seized with an inflammation of the lungs, and the grave receives her before her bridal days are over. 'What a Providence! exclaims the world. Alas! Did she not cut the thread of life her own self?

"A girl in the country, exposed to our changeful climate, gets a new bonnet instead of getting a flannel garment. A rheumatism is the consequence. Should the girl sit down tranquilly, with the idea that Providence has sent the rheumatism upon her, or should she charge it on her own vanity, and avoid the folly in future? Look, my young friends, at the mass of diseases that are incurred by intemperance in eating and drinking, in study or in business; by neglect of exercise, cleanliness, and pure air; by indiscreet dressing, tight lacing, etc., and all is quietly imputed to Providence! Is there not impiety as well as ignorance in this? Were the physical laws strictly observed from generation to generation, there would be an end to the frightful diseases that cut life short, and a long list of maladies that make life a torment and a trial. It is the opinion of those who best understand the physical system, that this wonderful machine, the body, this 'goodly temple, would gradually decay, and men would die as if falling asleep.'"

But very often the causes of early death, especially among children, are antecedent to the life of a person. These causes may be as remote as the violations of the laws of health by grand-parents or great grand-parents. A good, sound constitution at the outset is required to ensure health and long life. If there is a taint of disease, a latent poison in the system, it may be dormant for a long time, but favorable conditions may at any moment develope it, and disease fasten upon the victim. Thousands of deaths occur annually where the most skillful medical treatment has been employed. There are cases which baffle the skill of the most eminent men in the medical profession, because the causes which produce disease in such cases are so occult oftentimes that it is impossible to discover them.

Many diseases originate from some hidden taint in the blood, inherited from father or mother, or, possibly, both. But very many also have their origin in external causes that might be avoided. The want of cleanliness, the want of sufficient food, the want of exercise, and of sufficient clothing, as well as indulging in habits of dissipation and vice, living in cold, damp, impure air, are prolific sources of sickness and disease. Children who play and run in the fields and parks or open grounds, where they breathe pure air and are exposed to the sun, follow the best method known for the preservation of health and the prevention of disease. It is the healthy, life-giving exercise they take, which forces open the pores of the skin and prevents the accumulation of lymph in the glands of the body, cleansing the system of a mass of matter which only tends to disease it. Need it be said that exercise gives consistence to the flesh, hardens the bones, and strengthens all the fibres of the frame?

And here it is proper to specify some of the bad habits of children and youth. We may premise by saying that healthy parents are a condition precedent, for healthy children; for it is hardly to be expected that the offspring of diseased fathers or mothers will be free from disease. But much of the nervous derangements and physical infirmities of adult life are chargeable to indiscretions of diet for children, permitted by indulgent mothers, and habits which sow the seeds of disease in their systems. Parents who wish their children to occupy prominent and honorable positions in society, must see to it that the foundations are laid firmly by the acquisition of strong, vigorous constitutions. A sound body is necessary to sustain a fine mental superstructure. Sometimes a strong physique is combined with a weak mental organization; and again, a weak body may be coupled with strong mental faculties. But these are abnormal cases, due to antecedent conditions, and only serve to show that the natural harmony between the physical and mental organism has been disturbed by the folly or the ignorance of man.

Many of life's ills, we repeat here, are directly chargeable to indulgence, or mistaken kindness of mothers. Stimulating food and drink are given to young children before they can even masticate food; and the little ones are permitted to cram themselves every day or two with colored confections. The children are elated when their devoted parents bring home packages of prettily-striped, red, green, blue and yellow candies. Yet in the beautiful spiral streaks which ornament the confectionery lurk fatal poisons. Upon this matter one writer says: "A brief specification of some of the drugs used for coloring candies, I trust, will suffice to show parents that however pretty sugar sticks and toys are to look at, they are entirely unfit to enter the susceptible little stomachs of children. Reds are often obtained from red lead, vermillion or bi-sulphuret of mercury, bi-sulphuret of arsenic, iodide of mercury and Venetian red; greens from false verditer or subsulphite of copper and chalk, emerald green or arsenite of copper, Brunswick green or oxychloride of copper, verdigris or diacetate of copper, mineral green, green verditer or subcarbonate of copper and mixtures of the chromates of lead and indigo; yellows from gamboge, massicot or protoxide of lead, the three chrome yellows or chromates of lead, yellow orpiment or sulphuret of arsenicum, king's yellow or sulphuret of arsenicum, with lime and sulphur, iodide of lead, sulphuret of antimony or Naples yellow, and yellow ochre; blues, from indigo, cobalt, Antwerp blue, a preparation of Prussian blue, Prussian blue or ferro cyanid, smalt and blue verditer, or sesquicarbonate of copper. Litmus is also used in coloring blue, which, if unadulterated, is harmless, but it is frequently adulterated with common arsenic and peroxide of mercury. Browns are often obtained from umber and vandyke brown, while purples are generally made by mixing some of the objectionable minerals used to produce other colors."

Another authority (Hassell) says:—"It may be alleged by some that these substances are employed in quantities too inconsiderable to prove injurious; but this is certainly not so, for the quantity used, as is amply indicated in many cases, by the eye alone, is very large, and sufficient, as is proved by the numberless recorded and continually occurring instances, to occasion disease and even death. It should be remembered, too, that the preparations of lead, mercury, copper, and arsenic are what are termed cumulative; that is, they are liable to accumulate in the system, little by little, until at length the full effects of the poisons become manifested. * * * That deadly poisons should be daily used for the sake of imparting color to articles of such general consumption as sugar confectionery—articles consumed chiefly by children, who, from their delicate organization, are much more susceptible than adults—is both surprising and lamentable. It is surprising, on the one hand, that the manufacturers of these articles should be so reckless as to employ them, and, on the other, that the authorities should tolerate their use."

Candies may be colored with articles that are harmless, but probably not one confectioner in a dozen understands the properties of the colorings they use, and are not concerned about the poisonous effects of most of the pigments employed, so they make candy that will sell. For this reason it will be well for parents to reject colored candies for their children. This subject is one which properly and legitimately belongs to the province of legislation, and stringent enactments should be placed on the statute books, containing fines and penalties against the use of coloring matter in confectionery which may produce poisonous effects.

CHILDREN—FOOD AND MANAGEMENT.

The diet of children, from their earliest infancy, should always receive the attention of parents and nurses. A child, at its birth, may be healthy, and have a naturally strong and vigorous constitution. With judicious care such a child will develop into a strong, healthy man or woman, physically and mentally. But by indiscretions growing out of neglect or ignorance, or indulgence, the excellent conditions under which it came into being may be impaired or entirely destroyed, its organism become thoroughly deranged, and the little one may die prematurely or become a hopeless invalid.

A bounteous nature has supplied the conditions, favorable and necessary, for a perfect work throughout her domain. If there are shortcomings, and failures, and deformities, in the manifestations of growth and development otherwise, they arise from disturbing and unfriendly causes. A vital seed of any kind, planted under favorable conditions of soil and climate, starts into new life the plant after its kind. With proper cultivation and care it develops according to the natural law which governs it, blooms, perfects its fruit, and matures the germs which perpetuate its kind; and thus, having answered the end for which it was created, withers and dies. Its individual life may consist only of a few weeks or months, or, as in the case of some of the long-lived trees, it may extend to centuries. Accidents and unfavorable circumstances may dwarf or destroy either or both, but the same great law governs all the same. So it is with the human race. Untoward conditions undermine the strength and health. These result from causes, sometimes beyond, but mainly within our control.

The frightful mortality among children of early age points unmistakably to the folly, or ignorance, or neglect—or all three — of our people in their rearing and management. We consider this matter of so much importance that it will be considered at some length in these pages. Good health is to be prized beyond every other earthly possession, but it is sacrificed every day, foolishly, criminally, by thousands of men and women, both in their own bodies and in that of their offspring.

It has been said, truly and happily, that a babe in a house is a well-spring of pleasure, a messenger of peace and love. The little one is a bond of union, of mutual love and affectionate concern, in which the future of all three are bound up. A majority of the connubial infelicities of married people grow out of their being childless.

A new-born babe is the most helpless of all young creatures. How should it be treated? Not in the manner that thousands are treated. Here is what is usually done, as graphically described by an old physician: "First it is washed, then some spirits are rubbed on its head; one or two caps, and perhaps some flannel, are put on, and it is dressed. Then, of course, it must begin life by taking some sort of physic, either castor oil and sugar or buttter and sugar, made into a thick paste; shortly after this it is laid on its back, and some gruel is poured down its throat, and it is put to bed; but alas! not to sleep. In a little while it begins to cry, and it is so uneasy that something has to be given to make it sleep, or there will be no rest either for itself or others. If it has been sufficiently crammed, and, unfortunately, has not been sick, it is very likely to have a convulsive fit, and, after a hard day's work, the doctor will be roused out of bed to find it suffering misery from all this interfering with nature, or to find it already gone where thousands of infants have been sent before it. Now all this is an abomination: it is ignorance and cruelty, and it does not make it one whit less so for the helper to say she did it out of kindness; it is inflicting pain upon both mother and child when there is no occasion for it.

"Now let an old physician, who loves children, and has watched over hundreds of them, plead for these helpless little ones. Let me tell you a few plain truths. There is no oil or other medicine needed for an infant that has a mother to suckle it. The first supply of milk is purgative, and quite different from what comes afterwards. No infant requires food for the first twenty-four hours; no infant ever died for want of food the first day of its existence, but hundreds have died from overfeeding. And I need not say, give no spirit or soothing mixture, for if you do not abuse its stomach, but have faith and leave it to nature, you will not require any."

Nature provides the most suitable food for infants, namely, the mother's milk. In exceptional cases this supply during the first few weeks of the infant's life may be inadequate to its needs, and in such cases, if the child is delicate, a wet nurse should be provided, for otherwise it may be difficult to rear it.

From false notions of propriety, many mothers—and especially fashionable mothers—call in the services of a wet nurse, when there are no good reasons for doing so. Says an eminent English authority on this point:—"The only circumstances which should prevent a mother from suckling her offspring are a too excitable temperament or a consumptive state of constitution. Ordinary debility, consequent on recent confinement, is rarely an impediment to the fulfilment of one of the highest instincts of human nature, and one no less productive of moral than physical benefits. During the time a child receives nourishment at its mother's breast the earliest bond of sympathy, destined to influence a life-time, of parent and child is mutually formed. Without endorsing to the full the assertion that every passion to which our race is subject may be communicated through the medium of a wet nurse, it is certain that the affection of a child for its parent is vastly increased if nursed exclusively by herself.

"Whatever changes it may be necessary to make in the dietary of an infant after the age of six weeks, absolute necessity alone should induce the substitution of artificial food in lieu of natural food. The first milk is of a purgative character and is admirably adapted to cleanse the system of a new-born babe. In this particular the most desirable wet nurse might fail to prove a fitting deputy for the mother. Likewise throughout the period of nursing, it is a point of great importance that the quality of the nourishment should be proportionate to the age of the infant. If the services of a wet nurse are inevitable, it should be sought to engage one who has been a mother about the same length of time as the parent of the infant to be brought up. In selecting a wet nurse, a medical man is the best medium.

"During the first two or three weeks—the powers of suction and the organs of digestion being alike weak—an infant, *if awake*, may be suckled at intervals of from one to two hours. The sooner, however, the babe can be brought into the habit of being fed once every two hours the greater will be the benefit derived from the nourishment, and the more speedily will the mother be enabled to regain her own strength. A determination to attain regularity in feeding is all that is needed at the outset to secure the desired end. When this plan is steadily pursued, the digestion of a child will work with the precision of the clock by which its meals are regulated. Any cry that may be heard in the interval should not be supposed to arise from craving for food. Numberless causes of irritation may occasion a fretful cry: cold feet, pressure of clothing, wet linen, a flea, or other discomfort, may excite the piteous sound. Instead, therefore, of giving food instantly, it is advisable to open the clothing, warm the tiny feet, chafe the limbs, or, if possible, take the infant for a little walk out of doors. If, after having tried similar remedies, the fretfulness continues, the cause should be sought in the condition of the child's stools. If signs of griping pains or colic are evident, less instead of more food should be given, and the interval between the meals lengthened instead of diminished.

"Sometimes a continual cry of distress prevails, from the mother's milk being not sufficiently nourishing to satisfy the appetite of the babe. In such cases it is advisable to give, every alternate two hours, a meal of cow's milk and water, prepared in the following manner:—The milk must be boiled as soon as it comes in, and left to settle until a scum has formed on the top. Remove the scum, and add two tablespoonfuls of boiled water to one of milk, sweetened with a little loaf sugar. The above directions are applicable to milk known to be pure. If the milk has passed through several hands, the quantity of milk may be sufficient to the proportion of water.

"A lactometer (a small instrument to test the quality of milk) may be had at a very trifling cost, and affords some indication of the genuineness of milk. At the same time, we must confess to being very skeptical as to the nourishing properties of milk usually sold in towns, and would suggest, where any doubt exists, that condensed milk be substituted for the article usually obtained at metropolitan milk-shops. The condensed milk (which has been lately introduced into this country) is one of the greatest boons placed within the reach of dwellers in crowded cities. All children like it, and thrive on its use.

"The practice of giving thickened food to infants at too tender an age is a source of endless trouble. In one of Dr. Edward Smith's admirable articles on dietary he remarks that the feeding of young infants on bread, flour, biscuits, and other substances than milk, is a 'constant source of derangement of the liver, and a frequent cause of fits.' The organism of a young babe is not designed to convert such food into a healthy form of nourishment. However considerable the quantity of such food passed into the stomach of a young infant may be, the body is not thereby nourished, but irritated. A babe, like an adult, is only nourished by what it has power to digest. Where the powers are weak the form of nourishment should be correspondingly easy of digestion.

"As a general rule, a babe may be well nourished on milk, or milk thickened to the consistence of cream, until the first tooth appears. Even after that period milk should for a considerable time form the staple article of food. Larger quantities should then be given, and greater intervals between the meals observed. It is estimated that a babe three months of age will consume at least three pints of milk in twenty-four hours.

"Weak beef-tea, veal, chicken, or mutton broth, are excellent additions to meals composed of rusks, rice, or other farinaceous articles. Careful feeling of the way, however, should be observed in every change of infants' diet, especially if teething be in operation.

"A needless source of alarm is sometimes excited by an infant throwing up milk in a curdled state. The fact is that this appearance is perfectly natural in milk rejected from the stomach of a healthy child. The quantity rejected is simply that which was in excess of the child's want, and is Nature's special mode of relief in infancy. If the milk is rejected in a dense mass, it is a sign either that less would be sufficient for a meal, or that the interval between taking nourishment should be lengthened. But if, immediately on being put to the breast, or on beginning to suck a bottle of food. the stomach throws off the food, the condition of the parent or child should receive attention.

"A very necessary treatment after a meal consists in lifting the babe across the nurse's left sholder, ***whether awake or asleep.***, and gently patting the infant's back until the wind displaced by food is thrown off the stomach. **Wherever this simple precaution is** used, **gripes** and windy colic are seldom heard of. So great is the relief, that infants once accustomed to the treatment struggle tc lift themselves up after having been fed.

"The period of weaning is justly regarded as one of great anxiety to a parent. The only way to lessen the trial is to make the change gradually. A little self-restraint in keeping out of sight when the child may naturally be supposed to be hungry, is the greatest act of kindness the mother can confer on the little one. The most favorable time for weaning is in the warm weather, when the infant can be amused and kept much out of doors.

"The kind of feeding-bottle used is an important consideration. Those with cloth tubes and India-rubber tops are in most general favor, and for liquid or semi-liquid food are decidedly the best. If the food be thicker than semi-fluid, feeding with the spoon is preferable.

"The time an infant should take to imbibe half a pint of some liquid food should not be less than from twenty minutes to half an hour. In order to secure the necessary delay, the elastic top should be examined before each meal, to see whether the hole through which the food passes has extended with use. If so, a tie-knot with a fine needle and sewing silk should be made across the hole. It should be borne in mind that only such food as has been thoroughly mixed with saliva proves easy of digestion. The temperature of an infant's food should be that of its body. This may be maintained during feeding-time by placing the main quantity in a vessel containing hot water, within reach of the nurse's hand for replenishing.

"Throughout the period of early infancy, the best time for giving food is before the child is laid down to sleep; indeed, the act of taking food induces slumber. The importance of sleep being preeminent, it is better to waste the remnant of a meal, if need be, than to keep a sleepy child awake to eat.

"The utmost cleanliness should be observed in every detail connected with the keeping of all utensils for nursery use. When removed from the bottle, the India-rubber top should be immediately cleansed and thrown into a glass of clean water. The bottle should be cleansed from every trace of food, and twice a day rinsed out with tea-leaves and water, usually at hand in the nursery. When not in use, the botttle should be hidden from the infant's sight.

"Not more food than is likely to be consumed at a meal should be prepared at a time, owing to the tendency of milk and farinaceous articles to turn rapidly sour, especially in close rooms and in warm weather. Any portion of liquid food that it is necessary to set aside, should be boiled afresh, and not left after having been warmed.

"Farinaceous articles for night-feeding should not be kept over a lamp; diluting such articles with boiling water is a safer plan. Water is easily kept at boiling heat in an ordinary Etna."

"The nurse should avoid the unpleasant habit of testing the temperature of the infant's food by putting it to her own mouth. A little sugar sprinkled over the top of a feeding-bottle will often induce an infant to take the artificial food.

The mortality among children of all ages is largely owing to errors of diet; and many ailments from which adults suffer arise from the same cause. We are now considering the prevention of disease, and the promotion of health, and as healthy bodies cannot reasonably be expected if the foundations upon which they rest are impaired in childhood, dietary in early childhood will be further considered. And here we can hardly do better than to reproduce further valuable extracts from an article on the rearing and management of children, in the same valuable work above quoted from. *

"As a general rule, the appearance of the different kinds of teeth may be taken as an indication of the description of nourishment most suitable to the growing frame. Thus, till about the age of from five to eight months—*i. e.*, while the gums are in a toothless state—milk should constitute the food of a healthy babe. Between the tenth and sixteenth month the teeth next the front, and also the first double teeth, are generally cut. About that time the food may be made to assume a more substantial nature, gradually increasing in quality and quantity until about the twentieth month, when the canine teeth may be expected to appear. At this period, if the child be healthy, an evident want of some sort of animal food will generally be apparent. Weak beaf-tea, mutton, veal, or chicken-broth, thickened with rusks, will then be found excellent nourishment. Not, however, until between the twentieth and thirty-sixth month, when the second molar teeth are generally cut, is it advisable to give solid meat in the form consumed by adults.

"The above is the order of diet suggested by the structure of the teeth and the time of their appearance. Deviations must, of course, occur in the varied circumstances of life under which children are liable to be brought up; but the nearer we can follow Nature's dictates in the rearing of the young the greater are the chances of securing the inestimable boon of a sound mind in a healthy body. Later in life, when the pressure of necessity compels young men and women to live under conditions adverse to the true principles of health, little choice may be left as to the mode of living to observe. Throughout childhood, however, the first care of the guardians of the young should be to approach as nearly as possible to the highest standards of dietary.

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* Cassel's Guide.

"The circumstance which is most liable to frustrate true nourishment in food is the habit of pampering the appetite of children by the giving of sweetmeats. Plain sugar is not an unhealthy article of food. On the contrary, sugar is with many children an indispensable item in their diet. The natural food of infants is very sweet, and many substitutes would probably be rejected if it were not for the appetising presence of sugar. The notion that sugar has the effect of decaying the teeth is not well founded. In order to be a healthful addition to a meal, however, sugar should be taken in its *simple form*, and should not be eaten at intervals between meals. The inevitable result of giving sweatmeats, chocolate, bon-bons, &c., is to disincline the appetite for plain wholesome food. If such treats must be given, a lump of plain loaf-sugar answers the purpose of a gift or reward, and can do no injury.

"Salt is a necessary as well as a welcome seasoning in infants, food. A few grains should be in every kind of food — always intermixed.

"Farinaceous articles, being especially adapted to the digestive powers of young children, may constitute a large proportion of their dietary. The variety is almost endless, but only those should be selected as staple articles of food which contain the principal elements of nourishment. Of these the chief is plain wheaten flour. It is worth taking some pains to procure unadulterated flour for nursery use. Having done so, a good mode of preparing the meal is to boil a handful of flour, tied up in a cloth, till perfectly cooked, which may be known by the flour appearing like a hard ball. Turn the flour out of the cloth, and, whenever wanted, add about a dessert-spoonful of flour to half a pint of milk, mixed together gradually and afterwards boiled for a few minutes. Some persons recommend baked flour. The only objection against the latter is that baked flour is liable to get burnt in the oven, and becomes, consequently much less digestible. Baked flour, used in the manner above described, is very useful to arrest excessive relaxation of the bowels, to which many children are subject.

"Oatmeal porridge is excellent food for children of advanced growth. Owing, however, to the flinty particles of the husk of the grain, which have an irritating effect on the bowels of most young children, oatmeal is less generally used than wheaten flour. Oatmeal, to be easily digested, requires to be well boiled. If made with milk, oatmeal porridge is a highly nutritious meal, and is well adapted for a school-boy's breakfast.

"Properly prepared barley is a favorite and excellent food for infants. By the process of preparation much of the indigestible portion of the husk should be removed. Barley in the above form is often successfully used whenever a laxative effect is desired to be produced.

"Rice is not extensively used in English dietary, except as a thickening for soups for making puddings. As an addition to a substantial meal, plain boiled rice, eaten with jam or treacle, is much in favor, and is a good substitute for a pudding composed of flour, suet, &c., without the indigestible properties of the latter, if eaten after a full meal. An excellent and most nourishing rice pudding may be made in the following manner:—Take six ounces of rice; wash and pick it clean; cover it with cold water till the grain looks swollen; pour off the water, and add one pint and a half of milk, two ounces of finely-chopped beef-suet, a tablespoonful of moist sugar, a little nutmeg, and a pinch of salt. Work the suet well into the rice before setting the dish in the oven. This pudding should be baked slowly. The above rice pudding is one of the cheapest and most nourishing that can be compounded. If eaten cold, with the addition of a little jam, it may constitute a pleasant and healthy meal in summer time, when the appetite sickens at anything like animal food.

"Arrowroot is the least nutritious of the farinaceous articles in general use, and should not be relied on for nourishing properties. Arrowroot is soothing to an irritated state of digestion, but is no 'stay by' when lengthy intervals in taking food are observed. Arrowroot made with milk is nourishing, inasmuch as the milk itself constitutes the nutriment; but water arrowroot possesses scarcely any nourishing property.

"Fresh eggs are an invaluable article of food. Stale eggs are most pernicious. The best method of cooking eggs for young children is to coddle them. This may be easily done by filling a basin, containing a pint and a half, with boiling water, and setting the basin aside by the fire, closely covered, for seven or eight minutes. The basin and its cover should be previously heated. At the expiration of the time stated the egg will be found thoroughly set and entirely eatable. The white of boiled eggs is not wholesome for young children, and seldom even agrees with adults. Eggs used in puddings composed of farinaceous substances should be well beaten, and added just before the pudding is sent to table. Any browning of the eggs takes from their nutritious properties.

"Fish is an agreeable change of food, but is very inferior in value to beef and mutton. The best kinds for young children are whiting, smelts, and soles. As family fare, fish is generally regarded as an expensive luxury rather than profitable food; it is not necessary to dilate in this place on its use. If fish be given to children it requires the greatest nicety in cooking to be wholesome. Melted butter and highly-seasoned sauces should be avoided.

"Cooked vegetables of most kinds are a very useful vehicle for conveying animal food in its lightest form to young children. A well-steamed potato, or head of cauliflower, over which gravy from a joint has been poured, is as fine a repast as can be prepared for a child. In the absence of pure meat gravy, a well-made cup of beef-tea may be added.

"The beef need not be wasted; covered afresh with cold water, and left to simmer for a time, it makes an excellent stock for use instead of cold water. One pound of meat to a pint of water is about the proportion generally prescribed for young children and invalids.

"The best slices of meat at the family table should be reserved for the little ones. Joints dressed for the children's dinner should be sent up without any made gravy in the dish. The surplus gravy which flows from the joint should be saved for the following day's dinner, when a slice of tender meat put into pure gravy at boiling heat is nearly equal in nourishment to a cut from a freshly-cooked joint.

"Little folks should be encouraged to feed slowly, and therefore, if possible, a hot-water plate should be supplied to each child. There is no difficulty in supplying this luxury if ordinary soup plates are to be had. A plate of the latter kind filled with boiling water, over which the dinner plate is placed, forms a very good substitute.

"The most suitable joints for children are those in which there is little fat. Neither should burnt skin be given them. It is easy to produce a distaste for animal food by acts of oversight, and such acts should be guarded against. Very young children, if once disgusted with fat, seldom recover the habit of eating any, and thereby lose much nourishment. Mild fat of beef or mutton, if very finely minced and mixed with lean meat, is seldom detected, but lumps of fat are almost invariable refused.

"In early childhood meat daily is not always considered necessary. In the interval the principal meals should be of a higher class of nourishment than the minor meals consist of. As growth increases, with children reared in towns, meat is very desirable for the principal daily meal.

"Fats of most kinds are valuable, and children should be accustomed early to partake of such food. Bacon is excellent nourishment, and may be eaten when fresh meat is not served.

"The habit of giving children much bread and butter, to the exclusion of other substances, is an error liable to be contracted from the facility of providing the meal. The practice is to be condemned, not only on the score of deficiency of nourishment, but on that of economic value. The butter sold in towns is seldom what it professes to be, and is liable to be composed of inferior fats artfully diguised. Instead of paying a high price for an article of fictitious value, it is far better to make use of substances that are known to be of genuine quality—of such are lard and drippings. The latter is generally plentiful in families, and is far preferable as nourishment to much so-called butter generally sold. As for lard, nothing is easier than for a good housewife to prepare the lard used in her household. In point of price and quality the provisions thus used will be found doubly profitable.

"Baker's bread, which forms a staple article of food with children living in towns, is in experience, and generally speaking, a most unprofitable form of nourishment. If bread cannot be made at home, it is advisable to substitute some article of food which shall prevent craving for a baker's loaf.

"A more general use of soup, thickened with any of the farinaceous articles described, would lessen the appetite for baker s bread. No more nourishing meal, for instance, than a well-compounded basin of pea soup can be imagined. If to the soup be added stock liquor and a certain quantity of clarified beef dripping, most of the constituents of first-class food are present in this simple dish.

"Vegetable soups in which slices of bread are put carefully fried in dripping or lard and cut into dice, are very good food, infinitely superior to the meals of bread and butter accompanied by tea or coffee, which too often constitute the nursery breakfast and tea from one year's end to the other."

Under the head of "The Food We Eat," we have given further information upon dietetics.

IMPORTANCE OF SLEEP

Another thing of great importance in promoting health is a sufficiency of sleep, especially in childhood. Sleep is a function of the brain without which man cannot exist any more than without food and drink. In infancy it is indispensable to the healthy growth and development of the body and the perfection of the organs upon which depends the normal and harmonious action of all the functions.

This matter is so essential in the promotion of health that it should never be lost sight of in the rearing and management of children. The following facts and suggestions from "Cassell's Guide" comprise in concise, form, information which mothers and nurses especially should remember:

"An infant of sound health will sleep almost continually during the first five or six weeks of its life. All that is necessary in the interval is to guard against accidents likely to create disturbance. Of these injudicious feeding, deficiency of warmth, want of cleanliness, and over-fatigue, are the most liable to occur, converting the happiest period of development into a restless state of being, alike pernicious to parent and child.

"As though to indicate the necessity for this lengthy repose, the sense of hearing in a new-born babe is very dull. Ordinary conversation does not disturb an infant's slumbers, although loud, sudden noises may have that effect. In most instances a baby does not appear to be conscious of sounds until about the fifth or sixth week. In the meanwhile the necessary disturbances are confined to being suckled, washed and changed; for which duties occasion should be taken during the short wakeful intervals which happen when hunger prevails.

"So valuable is the repose sleep affords throughout the whole period of early childhood that too much pains cannot be taken to cultivate the habit from the earliest moment; for, be it observed, sleep is essentially a habit of our nature, and its recurrence depends chiefly on regularity of living and good health. At appointed times, and in certain places, infants should be encouraged to submit to sleep. Let them understand, by constant repetition of the necessary arrangements, that after food and exercise it is time to go to bed, and a lesson will have been learnt which will require no undue force to put into practice during the term of nursery life.

"Infants born in the winter, and during the cold months of spring, may sometimes require to sleep at the mother's side for the first few weeks; but if a babe be strong, and the position in life of its parents such as to afford a fire in the bed-room by night, infants may at once be accustomed to sleep in their own beds. Those that are thus trained thrive better than others who sleep and suckle the night through at the mother's breast, nor does the mischief of the latter habit end with the over-taxed digestion of the child. Few mothers are able to bear the drain thus made upon their strength, and in consequence, 'nursing' has to be given up much sooner than would otherwise be necessary.

"The natural time for slumber, in very early life, is immediately after taking food. As the young of almost all creatures show this disposition, there can be no harm in following the dictate. Opportunity, then, should be taken to lay the child in its bed, whether awake or not, after having been fed. A little later in life, when digestion is stronger, and better able to dispose of a heavier meal, an interval is necessary between taking nourishment and going to sleep.

"The utmost vigilance is generally necessary to prevent the habit of sleeping in the nurse's arms from being contracted. Most monthly nurses enjoy a doze in front of the fire—a luxury well earned by, perchance, a broken night's rest; but with infants no such necessity is felt. Still, if they are once allowed to feel the soothing influence of the fire's warmth, combined with the soft and pleasant mechanical movement of the nurse's knees, they speedily get rebellious against attempts to make them lie alone in the bassinet. In engaging a monthly nurse it is advisable to have it clearly understood that the babe is not to be nursed on the lap when asleep.

"To the above error, more than any other, may be traced the wretched, sleeepless nights which some parents are doomed to pass when the monthly nurse is gone. Suddenly the infant seems to have changed its nature; the tranquil repose by day is naturally at an end, and continuance of the bad habit of sleeping by the fire in the nurse's lap is contested for. To the inexperienced mother there seems to be no help for it but to get up and pace the room until irresistible slumber shall have fallen on the eyelids of her wakeful infant. For the unhappy father the case is worse. He has possibly to encounter a hard day's work the following morning, for which a disturbed night's rest may bring positive incapacity. This constantly complained of grievance may be safely prevented by a little firmness at the outset. Children that are accustomed from the commencement to be put awake into their beds find no difference of treatment when the monthly nurse has left. In a short time they may be even heard to crow with delight at the fancies their small imaginations picture in the dimly-lighted chamber.

"The best trained child, however, will not return peacefully to its cot if the bedding be not perfectly dry and comfortable. After the child has been lifted out, 'changed,' and fed, the pillow and mattress should be well shaken, and, if necessary, wet blankets be replaced by dry ones. Having put the infant back, the light should be partly screened or extinguished. These arrangements require to be made in a very methodical manner, and will only have to be repeated a few times to be fully understood by the child. If, at the outset, a cry of resistance should be heard, when it is time to go back to bed, a wise mother will conceal herself out of sight and turn a deaf ear. Sooner or later this breaking in will have to take place, and the longer it is delayed the greater will be the trouble.

"In families where upper servants are kept, the nurse usually takes charge of the infant by night, only taking the babe to its mother's room when requiring to be suckled, and returning to the nursery afterwards.

"About the age of three months an infant does not usually require night-feeding more frequently than when the mother retires to rest, and again towards five or six in the morning. At this age the faculty of observation begins generally to show itself, and affords a golden opportunity for conveying right impressions to the plastic infant mind. The first objects a child takes notice of are those which are employed in supplying its personal wants. Thus, the sight of a feeding-bottle will generally set a babe crying for food. In like manner it is a good plan to appropriate certain coverings to the use or an infant when 'sleeping-time' is in question. The writer has known a gaily-colored knitted rug to set the tiny inmates of a nursery yawning, from the sheer associations the familiar wrapper suggested. Each infant had in turn been enveloped in that rug preparatory to going to sleep, and they had not a thought of resisting its influence.

"By these and similar appeals to the infant mind, time is gained in imparting true principles of obedience, which might be too long delayed if deferred till the age of more advanced reason.

"The habit of taking a mid-day nap may be advantageously observed till the age of three or four years. Even if the child be not sleepy it is advisable to let it lie in its cot for a certain time after having taken exercise, and before dinner. If any inducements to lie down be needed, there is no reason that a few toys or a picture-book may not be allowed in bed. Pretending to hush a doll to sleep, for instance, will often send the child itself to sleep, and it is as good a *ruse* as can be adopted.

"Before putting the inmates of a nursery to bed, the room should be darkened and the nurse should betake herself, if possible, to an adjoining room, for any occupation she may have to fulfil.

"Care is needed not to arouse a child suddenly from its slumbers. Drawing up blinds, stirring gently a fire, or imprinting a gentle kiss on the lips, will generally cause the sleeper to wake in a good humor.

"A notion is prevalent that much sleeping by day lessens the power of sleeping by night; but this is an error. As a general rule, *the more a child sleeps the more it wants to sleep.* Wakefulness is mostly caused by over-fatigue and excitement, and is a positively painful state to the sensitive organism of a young child. This description of suffering admits of no alleviation but from sleep; reprimands and additional food do but increase the torment.

"It seems not to be necessary to point out the danger of giving narcotics to young children. But so long as such remedies are recommended as 'teething powders,' etc., we must not be supposed to ignore that the true nature of such drugs is not to facilitate the process of cutting teeth, but to lull restless infants into an unnatural sleep. Long before any disturbance of a child's health is likely to occur from teething, these compounds are apt to be administered simply to secure a quiet night's rest. The restlessness complained of arises, nine times out of ten, from flatulence and indigestion.

"A fit of sleeplessness may often be terminated by wrapping the infant in a warm covering and exercising it in an apartment of lower temperature than the nursery.

"In more advanced childhood than we have hitherto spoken of, the importance of sleep is undiminished, and should be observed with regularity. No invariable rule can be laid down for general observance, but most children between the ages of four and seven years require at least twelve hours' sleep. Ten hours are supposed to be needful for schoolboys, and eight for adults. Few children under ten years of age can be kept out of their beds after seven o'clock without injury to their health. When once awake in the morning, they should be accustomed to rise without delay.

"Most parents go to their children's rooms before retiring to rest themselves. The chief observations to make on these visits is whether the little ones are sufficiently covered, and that no draughts are felt from open windows and doors. In the winter, a few hours after having been in bed, most young children require a little additional covering, owing to the body having lost some of its temperature during sleep. Another precaution to take is, that the children's heads are sufficiently raised to prevent their breathing the air emitted from their lungs. This habit, if not necessarily fatal, is certainly liable to lay the seeds of a consumptive state, and to produce an impaired constitution.

"A single bolster is generally sufficient for raising a child's head. This should be rolled over and over in the under sheet, and the ends of the sheet should be firmly tucked between the mattresses to prevent the bolster slipping out of its place. One blanket should always be placed with the selvage ends across the bed, in order to allow plenty to turn in under the mattress. Children generally sleep more comfortably and suffer less from cold feet if their bedding is slight ly raised at the foot."

It is a pernicious habit to dose infants with soothing syrups and nostrums to make them sleep. Most of such preparations contain opiates that are dangerous and deleterious in their effects upon the child. The use of anodynes is seldom required by infants; never, when in perfect health. Better avoid all narcotic drug preparations, and use such anodynes, in case they are required, as are recommended by a physician, or those whose properties and effects you thoroughly understand.

Let us look into the philosophy of sleep. It is, as before stated, a function of the brain. It is impossible for man to exist long without it. It is a necessity of the system, and must be periodically indulged in. During undisturbed sleep there is a suspension of nervous and muscular activity which is required for the separation of the vital powers, from the fact that the exercise of their functions is destructive of the substance of their organs. While the brain sleeps, and the senses are at rest, and the muscles repose, the functions of respiration, circulation, nutrition, secretion and absorption continue, and thus there is a restoration of the waste which goes on during waking hours. The refreshing power of sleep depends upon the nutritive renovation which takes place while sleep continues. Ordinarily the brain of adults needs rest after twelve or sixteen hours of waking; but some people require more sleep than others, even in the same employment. Persons of plethoric habit, with good appetites and powers of digestion, are usually sound sleepers; the nervous do not sleep as long as the former, but it is held that their sleep is more profound; lymphatic, passionless individuals, who rather vegetate than live, are generally long sleepers.

But a sufficient amount of sleep for each individual is indispensable to health; as Professor Hubland states it—"without the proper amount of sleep the vital energy is dried up and withered, and we waste away as a tree would, deprived of the sap that nourishes it. The physical effects of sleep are: that it retards all the vital movements, collects the vital power, restores what has been lost in the course of the day, and separates from us what is useless and pernicious. It is, as it were, a daily crisis, during which all secretions are reformed in the greatest tranquillity and perfection." During sleep there is more or less consciousness of external impressions upon the organs of sense. After extreme fatigue there is usually a deep sleep which produces a complete suspension of the activity of the cerebrum and the nervous system, or, more properly, the sensory ganglia. When, from excessive fatigue and loss of sleep, nature refuses longer to be denied her legitimate requirements, a person will fall asleep under the most unfavorable circumstances: men sometimes sleep in the saddle, and soldiers frequently fall asleep amidst the din of battle. The sick often succumb, while suffering from acute pain, to the demand for sleep; the student sleeps over his books, and the tired workman drops his task when he can no longer overcome his drowsy feelings.

Regular hours of sleep, like regularity in eating, drinking, and other sanitary conditions, contribute greatly to a sound state of both body and mind. Says Dr. J. C. Jackson upon this subject: "As a habit and a fashion with our people, we sleep too little. It is admitted by all those who are competent to speak on the subject that the people of the United States, from day to day, not only do not get sufficient sleep, but they do not get sufficient rest. By the preponderance of the nervous over the vital temperament, they need the recuperating benefits which sleep can afford during each night as it passes. A far better rule would be to get at least eight hours' sleep, and, including sleep, ten hours of recumbent rest. It is a sad mistake that some make who suppose themselves qualified to speak on the subject, in affirming that persons of a highly-wrought nervous temperament need—as compared with those of a more lymphatic or stolid organization—less sleep. The truth is, that where power is expended with great rapidity, by a constitutional law, it is re-gathered slowly; the reaction after a while demanding much more time for the gathering up of a new force than the direct effort demands in expending that force.

"Thus, a man of the nervous temperament, after he has established a habit of overdoing, recovers from the effect of such overaction much more slowly than a man of different temperament would, if the balance between his power to do and his power to rest is destroyed. As between the nervous and lymphatic temperaments, therefore, where excess of work is demanded, it will always be seen that, at the close of the day's labor, whether it has been of muscle or thought, the man of nervous temperament, who is tired, finds it difficult to fall asleep, sleeps perturbedly, wakes up excitedly, and is more apt than otherwise to resort to stimulants to place himself in a condition of pleasurable activity; while the man of lymphatic temperament, when tired, falls asleep, sleeps soundly and uninterruptedly, and wakes up in the morning a new man. The facts are against the theory that nervous temperaments recuperate quickly from the fatigues to which their possessors are subjected. Three-fourths of our drunkards are from the ranks of men of nervous temperaments. Almost all opium eaters in our country—and their name is legion—are persons of the nervous or nervous-sanguine temperaments. Almost all the men in the country who become the victims of narcotic drug medicine are of the nervous or nervous-sanguine temperament."

A habitual deficiency of sleep, from excitement, dissipation, or study, produces, sooner or later, headaches, cerebral disturbances, restlessness and feverishness, and if these warnings be not seasonably heeded, inflammation of the brain, apoplexy, paralysis, insanity, and imbecility. The records of insanity show that this terrible malady often results from want of sleep. Dr. Cornell affirms that, notwithstanding strong hereditary pre-disposition on the part of some people, if they sleep well they will not become insane. No advice is so good, therefore, to those who have recovered from an attack, or those who are in delicate health, as that of securing, by all means, sound, regular and refreshing sleep.

Another eminent medical authority says that there is no fact more clearly established in the physiology of man than this: that the brain expends its nerves and itself during the hours of wakefulness, and that these are recuperated during sleep; if the recuperation does not equal its expenditure, the brain withers—this is insanity. Thus it is that in early English history persons who were condemned to death by being prevented from sleeping always died raving maniacs; thus it is also that those who starve to death become insane: the brain is not nourished, and they cannot sleep.

Nothing is so refreshing during sickness, or so conducive to rapid convalescence, as quiet sleep. Where wakefulness prevails, those who attend the sick should not manifest much concern about the return of sleep, as it will return, like the function of digestion, in its own due time, after the excitement or irritation to which the waking state is attributable, has passed away.

Sleep is promoted by cool air, labor, silence, and sufficient food. Care, sorrow and excitement destroy sleep or render it unrefreshing. Stillness, darkness, quiet, monotonous low noises, and gentle movements, are conducive to sleep. During sleep the temperature of the body falls about 1 1-2 degrees Fahrenheit; hence the chilliness generally felt during a nap in the daytime, and the propriety of using some light covering over the body during sleep, at all times, to avoid taking cold.

It is a bad habit for young persons—young children especially—to sleep with invalids or aged persons. This practice destroys the vivacity and physical energy of a great many children. The old, infirm, and sick, absorb the vitality and strength of the young sleepers at their side. Thus the former secure a longer lease of life, while the latter become prematurely old. Parents should protect their offspring from a robbery which can never be repaired. Again, diseased and healthy children should sleep in separate beds. The effect of allowing them to sleep together may benefit the invalid, but it is also liable to tell unfavorably upon the health of the more rugged child. The vitality of healthy children should be preserved intact at all hazards.

EXERCISE AND HEALTH.

Exercise is one of the most valuable promoters of health. In some form or other it is as important for mankind as food. The organism of the body can never be perfected without it. Elsewhere in THE HOME GUIDE the necessity of pure air has been considered in connection with health. Exercise in the pure, open air is highly necessary for children; and it is quite as essential to the preservation of the health of adults. The benefit of exercise is well known; it is essential to a healthy condition of the entire human economy. Health, strength and happiness depend largely upon the agency of muscular exercise in the propulsion and distribution of the blood. Usually the right arm and hand, as well as the right leg and foot, are larger and stronger than the left — a result of the greater exercise which the right arm and leg are subjected to. From more constant use than the left arm and leg—the arm especially—the muscles on the right side meet with a more full and constant supply of blood and are thus enlarged and strengthened. Blood is to the organs what food is to the stomach; it is their nourishment and strength. The constant cry of all the organs (says an eminenent physician) is for blood, more blood. It is the blood that builds up the body, and the benefit of muscular exercise in producing healthy blood is admitted everywhere. An illustration will indicate the manner in which the system is benefited by muscular exercise. We know that if we are bled in the arm the quantity of blood emitted from the orifice is instantly and sensibly increased by putting the fingers and forearm in motion The amount of blood which flows through the veins by the addition of this motion of the muscles is doubled or trebled in the same time. It is hardly necessary to say that bleeding at the lungs or from a wound is aggravated by motion of the body. When the whole body is in motion twice or thrice the ordinary quantity of blood is put in motion, than passes through the veins when the body is at rest. The blood is sent into the heart with increased force when we take healthy exercise; the heart is compelled to receive it, and propels it immediately into all the organs of the body — the lungs, the brain, the stomach, the liver, the bowels, etc. The organs being thus doubly fed by the agency of the muscles upon the blood-vessels, are actually increased in size, in the same manner as plants and trees are made to grow, by increasing the amount of nourishment which they imbibe. So it is plain that the circulation of the blood always requires the agency of muscular exercise, for the health of the body and the full development of its various parts, in order that each may discharge its peculiar functions properly. The stomach, the lungs, the brain, cannot attain their full size or strength without exercise. It aids circulation, and assists all the secretions and excretions which are so necessary to health.

What the nature of the exercise is does not matter so materially, provided it is sufficient for the purpose. Rural pursuits are especially conducive to health in this behalf. Any active, mechanical employment serves the same end. People of leisure must seek exercise in active amusements, of which walking is among the best.

These remarks apply both to children and adults; but they are especially applicable to children. Throughout childhood the little ones need exercise in the open air. They should always be properly clad in clothes adapted to the season, and when the weather is favorable, permitted to play out of doors a part of the time. Let them roll hoops, make dirt pies, and playhouses in the sand, play horse, jump ropes, and indulge in healthy and innocent amusement of every kind, so that their bodies may become strong, their chests broad, their systems vigorous from being built up by good, red blood, which is largely induced by such exercise. In this way the physical organism is prepared for the nourishment of mental growth.

Exercise is often, and very properly, recommended in case of torpor or want of action in the various parts of the body. It is said, with truth, that power is the first condition of health, the primary thing to be sought. Every person needs the power of endurance, mental and physical — the power of a healthy body to resist disease. Unless marred or destroyed by abnormal conditions this power is inherent in mankind, or capable of being developed there. The greatest degree of strength, vigor, health and perfection of the physical organization is produced by action. This it is that sends the blood coursing through the system, giving life, power and success as the result; in few words, exercise is a natural stimulus to the blood, greatly improving its quality, thus building up and renewing the vitality of the system.

While we do not claim that exercise is the great panacea for numberless ills to which flesh is heir, it is quite true that it is highly important as a remedial agent. The effects of exercise are set forth by one writer in this wise: " The first result is to equalize, the second to invigorate, the third to reconstruct and build up the tissues of the body. In the process of constant training these results are inevitasle,, and they necessarily involve the expulsion of whatever is present in the system.

"Thus, torpidity of the system, or of particular organs, is removed, very often, by active exercise. Exercise, for instance, is recommended for torpidity of the bowels; but the peristaltic action of the bowels is not awakened by mere motion. The benefit consists in the increased amount of fresh supplies of blood which are forced into the coats of the intestines, thereby giving them new life and vigor. Thus the peristaltic motion is increased.

"The skin, which had been clogged with decaying matter, yellow with bile or white for lack of capillary circulation, acquires the natural glow and color of health. The face becomes fuller and rounder, in its outlines (the uniform and natural indications of vigorous vital organs), and acquires that beauty of form and lively animated expression which can only result from healthy, physical, mental and moral conditions.

" Nor is the effect, tone and character of the mind and will less apparent. The vacillation and weakness peculiar to an unbalanced condition come to an end. The step is firm and the will determined. Consciousness of power underlies and promotes all the elements of a perfect manhood and womanhood. Persons who vainly grappled with health-destroying habits, or who, in consequence of the weak and abnormal condition of their mental faculties, have had no desire to resist them, may oppose them successfully.

"The system is purified from disease; the morbid matters — sure contagion, fever and premature death — are expelled from the system; the patient, instead of being weaker, is made stronger by the process, and is protected against relapse and subsequent assaults of disease by his greater degree of organic power. His vigor of mind and body is greatly increased, and he enters upon his daily duties anew, with prospects of longer life, business success, and greater usefulness, in whatever avenue he may enter.

"The curative power is inherent in the human organism. It is by developing and increasing this power by a correct system of physical culture that a cure is effected. In spite of our constant transgressions of nature's laws she is ever striving to neutralize the effects of our errors, and to make us wiser and more healthy. We have only to meet nature half way to become constant in progress towards physical, mental and moral perfection."

The beneficial effects experienced from taking exercise in the open air, by walking, have been before spoken of. Riding on horseback is also among the very best means of taking healthful exercise. It combines a large amount of motion, both active and passive, with agreeable excitement. When a man rides on horseback nearly all the muscles are brought into healthy play, and the exercise is both exhilarating and healthful. In the case of women, the side-saddle deprives them of a good share of the advantage derived from this kind of exercise. The behests of fashion, in this as in other particulars, discriminate against the pleasurable and beneficial enjoyment of ladies. They are compelled to assume a position unnatural and tiresome; one limb is put to sleep on the pommel of the saddle, and while she would naturally face the side her limbs occupy, she must, in order to face her attendant in conversation, twist her head over her shoulder. It would not tax the inventive genius of the age very severely to produce a saddle and a costume which would not only be graceful, but permit a woman to sit squarely and comfortably on her horse and secure all the benefits which men derive from this excellent kind of exercise.

Light gymnastic exercise is also highly beneficial. It has long been popular in Europe, and has latterly been introduced into this country. Light gymnastics, parlor gymnastics, or musical gymnastics —all of which terms denote the same thing—have been called "the king and queen of in-door exercise."

This kind of exercise is highly appropriate for home recreation, and it was designed, at first, to refer to it in that connection in earlier pages of this work; but upon reflection it was deferred, as more appropriate for this portion of The Home Guide.

Some of the advantages of this description of exercise are, that the physical movements are so devised as to bring every movement of the body into exercise, and encourages the commingling of the sexes therein. A physician, in speaking of it, says: "The gymnastic march brings the sexes together in a frolicking exercise, which brings as much motion to the limbs as the old-fashioned jig. The ring exercise again unites the sexes in movements and attitudes which bring into play every muscle belonging to our wonderful bodies. With wooden dumb-bells and wands a series of exercises may be indulged in at home or in the class, which call into play muscles that men or women of sedentary habits hardly know they possess. The 'breathing exercises' give ladies who, from long habit of pernicious dress and short breathing, might imagine their lungs were no larger or deeper than a chicken's crop, some rational idea of their respiratory capacity. In the vocal exercises the voice not only receives cultivation but an increase of strength, and these, combined with the breathing exercises, afford an excellent medicine for people of a consumptive diathesis. In the class all of these movements are made under the inspiration of music, and music itself is better than medicine for many people. Luther and Milton found the greatest solace in music. 'Nothing,' said Alfieri, the Italian tragic poet, 'so moves my heart and soul and intellect, and arouses my very faculties, like music; almost all my tragedies have been conceived under the immediate emotion caused by music.'"

Although dancing has, to some extent, fallen under the ban of the clergy, by reason of excesses and abuses which frequently are committed in its enjoyment, it is nevertheless among the most healthful and beneficial methods of taking exercise. There is no doubt that violence is often done to the health by dissipation and indiscretions resulting from the ignorance or folly of some persons in dancing beyond reason and at unseasonable hours. But this is not a valid objection to this healthful and exhilarating exercise. As well might one object to the acquisition of property because some men become misers; or that the marriage relation should be swept away because some men and women are unhappily mated. Rational pleasures and gratification are commendable—are, indeed, a necessary condition of our existence — and if we would reach the maximum of enjoyment in life they must be reasonably indulged; and as dancing, at proper times and places, is among the best exercises for persons of sedentary habits, and invalids, it is eminently wise to enjoy it.

There are other innocent recreations, both in-door and open-air, which afford agreeable and healthful exercise, and are commendable, but which need not be referred to in detail.

Of late a system known as "Cumulative Exercise" has attracted considerable attention, as being peculiarly beneficial to persons engaged in sedentary employments, and machines have been invented by which exercise may be taken daily, calculated to give strength and health to the body. The *rationale* of the Health Lift, or Lifting Cure is that the tension or contraction of the muscles is among the most efficient agencies in promoting the circulation of the blood in the minute blood-vessels (capillaries) and in the veins, and that, through this improved circulation, disease arising from congestion or inaction of the various vital organs, is relieved or cured.

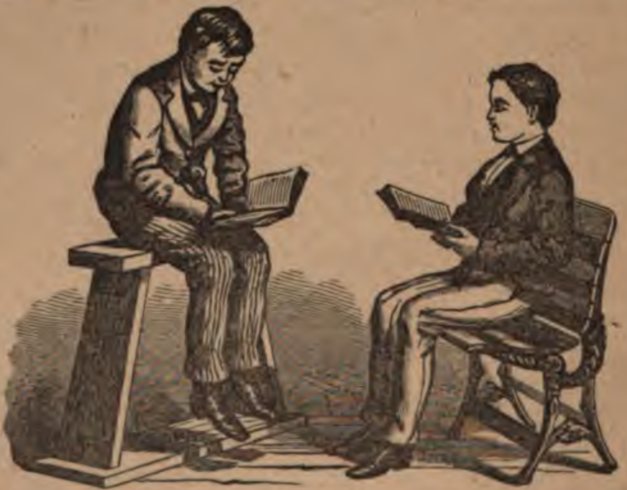
In former portions of this work the important relation of oxygen to animal life is pointed out. It must be supplied to and absorbed by the various tissues of the body. Now, as it is a fact that while the muscles are acting they absorb six times as much oxygen from the blood as they do when at rest, it is plain that an increased demand is made upon the respiratory capacity, and thus a more thorough elimination of waste matter and poisonous gases is brought about through a more perfect æreation of the blood, resulting in more vitality to the machinery which is constantly operating within the body. The friends of the system claim that this desideratum is found in cumulative exercise as followed in their practice. It is not to be doubted that this kind of exercise taken judiciously and regularly is very beneficial.

SENT TO SCHOOL TOO YOUNG.

Many parents commit a serious error by sending their children to school at too early an age. The public or private school is not a proper place for a child under five or six years old. Some one has pertinently said that a child three or four years of age, seated on a bench in school, is no more in his place than a twelve years' old boy would be on the judge's bench in a court of chancery. There is enforced constraint when the child requires the utmost freedom from it. He is subjected to severe and health-destroying discipline at an age when all the vital forces demand free play for the proper development of the body. A child of this age cares nothing for letters and syllables; there is no desire for knowledge in its infantile mind.

Nature craves something else which is very necessary to the development of the mental faculties. If a desire to study is developed in children earlier than five years of age it should be discouraged. Infantile prodigies of intellect nearly always result in physical wrecks; and this is simply the manifestation of a great law of nature. Let parents remember it.

While upon the subject of sending children to school, let us call attention to one abuse which is far too common, and that is an error of posture occasioned by uncomfortable seats. Seats for the school-room should be easy and comfortable and adapted to the various ages or sizes of the scholars. If a seat is too high or too low, errors of position will occur, productive of both blood and nervous derangements. Seats should always be provided with suitable backs for the support of the spine, and children should be required to maintain a correct posture. Many cases of spinal disease and pulmonary consumption have had their origin on the uncomfortable and fatiguing benches of the school-room. A number of cases of curvature of the spine have come under our own observation which have been traced to this source. There is no doubt that hundreds of cases of consumption have been induced by high, ill-contrived seats in school houses.



ERROR OF POSITION. CORRECT POSITION.

The bones of the body are composed of cartilage and salts of lime, and the relative proportions of these substances vary at different periods of life. The cartilage contains gelatine; the salts are the carbonate and phosphate of lime. During early life the cartilage or soft parts of the bones, exists in great quantity, and hence the bones are easily bent and distorted; in old age the salts of lime being most abundant in the bones they are easily broken. It is plain that the seats of small children should be low, with convex backs, so that the feet may rest on the floor, and the loins or "small of the back," may also be supported. The uncomfortable benches and stools which have been used, and are still found in some schools in this country are evidences of a cruel age and criminal neglect. Children have rights which parents, guardians, and school directors are bound to respect. Happily, the old state of things in this respect is rapidly being done away, and seats with suitable backs provided, which are adapted to the size and age of different scholars. The inventors of the approved modern school desks are public benefactors. The accompanying seat and desk illustrates what such a desk should be. It represents the "Triumph," one of the most popular combined seat and desk made. These desks (as stated by a prominent Superintendent of schools) are not only substantial and beautiful but by, their peculiar construction they secure perfect ease and comfort to the pupil, at the same time that they encourage that upright position so necessary to the health and proper physical development of the young.

When it is recollected that for several hours every day throughout school terms, during their early years, children are obliged to remain in a sitting posture, the importance of this subject becomes apparent. There is no doubt that such errors of position in the school room have occasioned weakness, irregular growth, deformity and disease of the spine in a great many instances. The pliability of the bony structure of children renders it very easy of distortion, by sitting in an unnatural position, and hence cases of curvature of the spine have been traced to this source. The evil does not end simply in deformity; the functions of the spinal marrow are sometimes more or less deranged, as well as the nerves emanating from it

ADULTERATIONS OF FOOD.

In preceding pages of THE HOME GUIDE, under the head of "The Food We Eat," the classifications of food are given, the flesh-forming and heat-producing substances required to sustain life are pointed out and the nature and uses of food explained. The intelligent reader will discern the importance of the information there given of the relation between food and health; but it is still more essential for the preservation of health that the adulterations which lurk in much of our daily food shall be detected and the food thus tampered with discarded.

The adulteration of food is one of the serious evils of the times. It is well-nigh universal, and the hurtful influence and pernicious effects resulting therefrom call for effective means to repress it. One scientific writer calls it "Popular Poisoning," and remarks that we do not know what we eat and drink, and that our physician cannot predict with any degree of certainty the effect of his prescriptions.

Those who engage in this reprehensible business thrive by underselling the honest tradesman, besides corrupting the physical health. The frauds practiced upon the community in the common and necessary articles of food and drink show the necessity for information by which we may, at least to some extent, detect such adulterations. A little insight into this business would prove beneficial. The community is not altogether free from blame in the matter. Public indifference enables the manufacturers and dealers who practice these frauds to go on in their nefarious work with impunity. Some of these individuals, through long service, have, seemingly, deluded themselves into the belief that such practices are legitimate; but no strictly honest or conscientious man will expose for sale any article that he knows contains hurtful or poisonous substances. But all are not honest and conscientious, and hence consumers must not trust the matter entirely to them. Customers should have the means in their own hands of ascertaining who among dealers are honest and who are not. This result cannot be effected by a single individual, but can be reached by co-operation among neighbors and communities.

As a rule, adulterations are not easily discovered, or people do not know how to detect them; else those who deal in articles thus tampered with would soon come to grief. Nearly every community has within its limits a number of citizens having the requisite knowledge, and a taste for chemical investigations, to detect by analysis most of the deleterious substances which are employed in adulterating articles of food, and these persons would confer untold good upon their fellows by exposing these frauds. But what is more practicable, every community has many more who, though ignorant of chemistry, may use that most effective of all weapons in detecting unsafe adulterations — the microscope. Every person may, and by a little industry, will acquire sufficient experience to use this instrument with beneficial results.

When the appearance of a genuine article of food is familiar to a person the use of the microscope reveals at a glance a spurious compound, or the presence of foreign ingredients. If the article to be examined is in the form of a root, stem, or seed, cut thin slices from it and subject them to the instrument, If a powder, add a drop of water with it on the glass slide of the instrument, making the layer of material so thin that the light may pass through it, and if a fluid, subject it to the same treatment.

The cost of a small microscope is but a trifle. The "Gem" microscope sold by all opticians and druggists, may be had for one dollar and a half. It will be found of great utility and value in household economy. A microscope, and those natural aids with which nature has endowed us, sight, taste, smell, feeling, and comparison of weights, will help us wonderfully in detecting various adulterations which have been mixed with articles of food. Some rules for detection of frauds which will be given further on, may be of great advantage in this matter. These simple means of detection, if employed generally by consumers, provided the adulterated articles are discarded, will go far towards breaking up this evil, for it will soon touch the pockets of manufacturers and dealers, and when it is no longer profitable to pursue this business it will cease. In New York and elsewhere many adulterations of food have been exposed through the public prints, with good effect. In London, from 1850 to 1854, Dr. Hassall, in the *Lancet*, waged a very successful war against food adulterations. The result, as stated upon credible authority, was,

that such adulterations were reduced to one-twentieth of the amount which had previously found a market. The *Sanitarian*, in this country, has done a good work also in the same direction. An article in its pages on "Bread Tests and Adulterations," is incorporated in THE HOME GUIDE.

COFFEE AND TEA.

While people submit quietly to these impositions, whether or not dealers are aware that their practices are known, they will be emboldened to continue them. The remedy consists in exposure and refusal to buy from those who sell adulterated articles of food, more than in depending upon the enforcement of laws, for generally the legal enactments in such cases are not enforced. Thus, dealers will find that it will not pay to keep adulterated articles for sale. But the authorities should see to it that infractions of the law in this regard are punished. This evil is far less prevalent in Europe than in this country, for the reason that the laws upon the subject there are enforced.

The vast amount of coffee and tea consumed in this country afford a wide field for the perpetration of frauds in the adulteration of these staples. The articles mostly used to adulterate coffee are chiccory, burnt beans, and peas, rye, dandelion root, molasses, acorns, mangel-wurzel and roasted horse-liver. Besides these there are numerous other substances employed for the same purpose. Then again, the grounds of coffee which have been once used, are made to do duty again, by soaking in a preparation of the essences of some cheap substitute for coffee. Sometimes these grounds have been thrown among garbage from the kitchen, or into the street sewer, and mixed with all manner of filth, whence scavengers have taken them; they have subsequently been washed, dried, and mixed with good coffee; or the odor of coffee has been imparted to them by other means. It is better to reject prepared coffee altogether. A good article of genuine coffee goes farther than any imitation, and is, therefore, cheaper at a higher price. Good housewives nearly always buy green coffee, roasting it at home, in small quantities. Roasted coffee soon parts with much of its aroma.

Good coffee is firm, solid, and heavier than water. If, upon being emptied into a vessel of water, any of it floats, that portion of it is not good. Sometimes genuine coffee is heavier than its adulterations, and its purity may be ascertained by comparison of weights. Pure roasted coffee assumes a chocolate color, and in infusion takes on a deeper reddish tint by treatment with a few drops of iodine, while the chemists tell us that its spurious mixture may be detected by the deep, blue, or purplish red color which iodine gives their solution. Per-sulphate of iron added to an infusion of pure coffee gives it an intense green color, while if the principle of chiccory be present, the liquid will take on a brownish yellow color after the precipitate produced by the iron has settled. Ground coffee that has previously been used may be known by its bitter taste, and the absence of the peculiarly pleasant aroma of the genuine grain.

Teas are universally drugged and poisoned. Says one chemist who has investigated and written upon the subject: — "Consumers have a simple choice of avoiding its use or of selecting the least injuriously doctored samples. Experienced tea-drinkers profess that they can speedily detect the difference in flavor between genuine teas and the many spurious substitutes from which infusions are served up to us, but no sufficiently simple rule can be given by which those who are ignorant of it may acquire this skill, beyond a keen comparison of color and flavor; and the microscope must be most relied upon in detecting with certainty, the many dangerous impositions practiced upon us in this article.

"The grounds of tea which have been used once, like those of coffee, are to a great extent, used again. The custom originated with the Chinese, and they may be found by any observer plying their vocation in the streets of San Francisco, and haunting its restaurants, club houses and hotels, to gather up the leaves of the teas whose properties have been extracted by use. The process has imitators in this country, and it is one of the secrets of the trade that certain large importing tea houses now make yearly contracts with the principal hotels and eating houses whereby for a small consideration they are handed the *debris* of the tea vessels — the leaves that have been used, and their properties extracted. These with the street gatherings are washed, carefully spread out on copper plates, subjected to ingenious manipulations, currents of air and careful spreadings, colored by poisonous mineral treatments, and then mixed sometimes with a very small quantity of genuine teas, but always with a very large proportion of the leaves of a long list of plants that are called upon to furnish substitutes for the leaves of the tea plant, and the vicious mixture is successfully foisted upon us as the 'best samples of the new crop, just arrived from China or Japan!'

"This may not be the first time that our teas have undergone this recuperative treatment; if so we are but imitators of those from whom we get the herb. The yearly demands of civilized nations for tea are much in excess of the entire capacity of production of tea-growing countries, and when we consider that our friend John Chinaman and his tea-growing neighbors have a strong hankering after the secretions of this herb of the gods, and in their little dominions use no limited quantities of it, and yet as all of our immense orders are promptly fillèd when accompanied with the funds, this question naturally arises: 'How are our supplies of tea furnished?'

"Just in this way: By shipping to you the dregs of John Chinaman's cup! It is very safe to say that one-third of the teas which we receive from China and Japan have tickled the palate of the Mongolian before they drop into our cup, and that a goodly part of this third goes through successive uses before it is consigned to rest. Of the other two-thirds it is a very large estimate to say that one of them may be the original leaf, while the other is made up of adulterations from other plants.

"There is not one chest of tea in every thousand shipped to us from China that is not heavily adulterated before leaving that country. The list of plants whose leaves are used in these adulterations is too long to be given here, but among them are the ash, plum, *chloranthus inconspicuus*, *olea fragrans*, etc. The mineral ingredients used in giving color and glaze to the contents of tea chests are numerous and all of them most pernicious. The dangerous poisons, indigo, Prussian blue, turmeric and arsenite of copper and lead, are most commonly used, while plumbago and graphite are called into requisition for glazing. Teas are thus dangerously adulterated with vegetable and mineral poisons, only to be 'doctored' anew, and made yet more unsafe and unfit for use by unscrupulous dealers in our own communities."

Such is the testimony of one who knows whereof he speaks; and not of one, for the subject has been investigated by not a few scientific men, and always with the same result. In fact, teas are almost universally adulterated; so it is true that consumers have a simple choice of avoiding their use or of choosing the least injuriously "doctored" samples.

Many persons who have, by long experience, become experts either by a discriminating taste, or by tests which they have learned to apply, can detect the difference between genuine teas and the spurious plants which comprise a considerable portion of what are sold as teas, but the number of such persons is comparatively small. No sufficiently simple rule can be given by which persons who are not experts can detect many adulterations that enter into tea. Comparison of good and bad tea will aid us in acquiring a knowledge of flavor and color so that we may reject that which is very poor; but here the microscope will be very useful in detecting with certainty the many dangerous impositions practiced upon the public in the tea trade.

To detect tea that has been previously used or which contains spurious admixtures, without the use of the microscope, may be difficult to many persons, and it is therefore advisable to procure this valuable little instrument, but if that is impracticable, obtain some genuine leaves of tea, moisten them and spread them carefully between the leaves of a book. When a sample of tea is suspected, subject a number of its leaves to the same treatment, and comparison will often detect the fraud. Genuine green tea has a dark, bluish-green color, and a pleasant, fragrant odor. Genuine black tea forms a brownish infusion with boiling water, and its leaves are much darker than green tea.

It was doubted for a long time whether, beyond its temporary effects in stimulating and refreshing the system, tea possessed any value, or contained any real nourishment whatever. This question has been satisfactorily settled. The late Baron Liebig, the world's great chemist, showed that theine, the peculiar principle of tea, is the substance most easily converted to the formation of bile, and that by means of it the supply of that necessary fluid can be kept up in those who live on a low diet, and can take but little exercise. It should not be relied upon, however, by persons who lead sedentary lives.

The choicest and most costly kinds of tea do not enter into the world's commerce. They never leave China. The mandarins pay prices for it which no one outside of China would think of paying. Think of drinking tea costing in China over twelve dollars per pound! To that would be added transportation, duties, etc., if imported, making it cost from fifteen to twenty dollars per pound in this country. It is not possible, however, to obtain the identical articles which are so expensive in China, for they would lose, in transportation, the delicate flavor peculiar to them at home.

The following descriptions of genuine teas may be useful: Bohea is a black tea. It has a coarse, common leaf, and contains a large amount of woody fibre. As it is much roasted, it keep a long time without becoming musty, and makes a dark infusion. Its name is derived from the Bohea hills in the black tea district.

Congou, which formed the bulk of the East India Company's importations during their monopoly, is a better and more carefully prepared tea; but since the trade was thrown open in 1834 it has sunk in repute.

Souchong is the finest of the strong black teas, and is made from younger leaves than the preceding. *Padre Souchong* is Souchong of the finest quality. Some kinds of Souchong, as the *Caper*, are scented by roasting with various flowers.

Pekoe is the finest of black teas. It is made from young buds picked in April. Very young buds clothed with down make *Flowery Pekoe*. Pekoe does not keep very well, as, in order to preserve its delicate flavor, it can only be slightly roasted.

Of green teas there are five kinds. Twankay is a coarse and common description, corresponding to Bohea in black.

Hyson skin is the lighter and inferior leaves of Hyson blown from it with a winnowing fan.

Hyson is, or should be, good, green tea, gathered in the spring and carefully dried and rolled.

Young Hyson is an earlier, and therefore more delicate gathering.

Gunpowder, so called from its granulated appearance, is the finest and most carefully rolled leaves picked from the Hyson.

Tea drinking is so universal, and the demand for it is so great, that scarcely any other article tempts the cupidity of men so far as the production of spurious and adulterated teas, and hence the amount of space that is here given to the subject.

SUGAR.

Sugar, another staple article with the community, is also shamefully adulterated. This is especially true of the common brown varieties. White crystallized sugars are comparatively free from the worst impurities found in brown sugars; nevertheless, they are often adulterated with white sand, and when crushed fine, ashes, finely pulverized clays, bone dust, and ground plaster are mixed with them. Brown sugars of the cheap kinds are usually totally unfit to be taken into the human stomach, from the fact that they contain a large per cent. of animalcules, which may be seen easily by the aid of the microscope. Besides, they are tampered with largely by the addition of sand, saw-dust, ground yellow clay and ashes.

Many people buy coarse, brown sugars because they are cheap. The economy of this policy is questionable. The amount of water and of impurities retained in such sugars is very great. To these kinds of sugars the adulterations of unscrupulous dealers are chiefly confined; and, as before stated, such sugars are rarely free from forms of animal or vegetable life. Says one authority on this subject: "When examined under the microscope, poor, moist, sugars are found to be mixed with woody fibre, portions of cane which have not been removed, and with grit; frequently also with particles of flour with which they are adulterated, at the same time to increase their weight, to absorb superfluous treacle, and to give a whiter color. Sporules of a kind of fungus are also met with not unlike those of the yeast plant; and almost invariably, and often in considerable numbers, a most disgusting form of animal life. This is the *Accarus Sacchari*, or sugar mite, a creature almost similar in appearance to the itch insect, which increases rapidly and is most tenacious of life. Dr. Hassall thinks it probable that the grocer's itch, a complaint common with those who handle sugar, may be caused by this animal; and, after a long and careful investigation of many samples of sugar, he found himself compelled reluctantly to pronounce 'that the brown sugars of commerce are, in general in a state wholly unfit for human consumption.' The lump sugar, on the other hand, he found to be pure and wholesome, as also the sugar candy, crushed lump, and generally the white, large grained sugars of the East Indies. Between the high-priced and low-priced lump sugars there appears to be no difference in any material point, the cheapest being little inferior except in color.

"Good moist sugars may be distinguished by the eye, by being light in color, dry and very highly crystallized; the impure are dark, small grained, imperfectly crystallized, and often present a damp, heavy, earthy appearance. Good sugars, when touched, should not feel sticky or clammy, but perfectly dry. Another test is also to be found in the papers in which they are wrapped. Grocers usually employ a thick and porous paper for this purpose, that it may absorb the superfluous moisture of inferior sugars; and if the article be allowed to remain in the paper for some time, it will, if bad, stain and saturate the paper. So great is the quantity of water found in poor, moist sugars, that Dr. Hassall questions whether, setting aside all considerations of purity, cleanliness and health, any person can afford to buy them. Decidedly, in our opinion, no person who pays due regard to real economy can afford to do so."

FACTS ABOUT MILK.

Another important article of food, which is scarcely, if ever, found pure when it has passed through the hands of dealers, is milk. As it constitutes a large per cent. of the food of infants and children, and is used in a variety of forms through life as a part of daily diet, its purity is a matter of very great moment. Upon this rests in a great degree the health of a rising generation. Professor Cherry says it is unquestionably established by scientific investigation that the milk from animals shut out from the light of day, confined in close air or crowded stables, or supplied with distillery swill and sweepings, is a source whence the noxious substances taken in the food are eliminated: in other words, that much of the foul matters taken into the system of the animal enter into the milk and is thus thrown off. This is proved by the unduly large proportion of casein in such milk, the diminished proportions of sugar and butter, and the change of its alkaline actions to aciniferous ones. The dangerous character of such milk is thus apparent, and finds forcible illustration in the several forms of dangerous disease traced directly to its use, and which carry off thousands of young children every year.

As milk is subject to many adulterations, so it is robbed of its nourishing element, the cream. We refer to milk brought to cities and large towns, from the country. The cream is removed, and water in large proportions is substituted, and to conceal this fraud, annotta, chalk, clays, etc., are added to thicken, color and flavor the milk. Salt, sugar, and various alkalines give the saltness and sweetness of natural milk to the mixture, and calves' brains give a perfect imitation of the rich, oily cream. It has been estimated that most of the milk used in cities contains not over fifty per cent. of the genuine fluid.

The most common frauds in regard to milk are the addition of water and the removal of cream, and both processes give to the milk a bluish tint. These frauds may, as a general thing, be detected by the instrument called the lactometer. This is simply a glass tube closed at one end, and marked with fine divisions on the outside. The milk to be examined is allowed to remain for twenty-four hours in the tube, and the depth of the layer of cream is then observed by means of the graduations. A few good samples may be examined first, to learn the quality of good milk.

Some substances, as chalk and starch, are sometimes used to give an appearance of cream to milk which has been skimmed or diluted. The microscope is required to detect some of them, but chalk soon settles to the bottom instead of rising to the top, and can be discovered in this way: Allow the milk to stand in a tumbler for seven hours, then pour it out carefully, leaving only the sediment at the bottom. Fill the glass with water, and again allow it to settle. If there be any chalk in the milk it will now be seen as a white powder at the bottom of the glass. Pour off the water carefully, and add a few drops of vinegar to the sediment, and if the latter consists of chalk it will effervesce distinctly, just as carbonate of soda does when treated with acid.

The proportion of sugar in milk is usually very uniform — about five parts in a hundred. The greatest variation is in the butter. Milk of average good quality contains in 100 parts of butter 3.43. and of casein 3.12.

The following shows the constituents of good milk. It is the mean of ten analyses, and may be useful as a standard when it is desired to make a chemical test of milk which is suspected of being adulterated:

Water	862.8
Butter	43.8
Sugar of Milk	52.7
Casein	38.0
Salts	2.7
	10.000

FACTS ABOUT MEAT.

Every housekeeper should know how to judge properly of butchers' meat. The truth is only stated simply when it is said that a large amount of meat is sold in cities, which, by reason of putrescence, or loathsome disease in the animal, is not only disgusting but dangerous food. It requires very great diligence on the part of health officers, in large cities especially, to prevent the sale of tainted or otherwise unwholesome meats. The cupidity of some persons in this branch of business, as in others, leads them into disreputable practices. Such frauds are not confined to butchers; occasionally instances are found among those who raise animals in which diseased and unborn meats are put on the market and sold. Animals are liable to sicken and die, and in the transportion of vast numbers of them to market in large cities, the losses from this source are by no means light. But such losses are seldom recognized. Let an ox, or a sheep, or a hog, sicken while in the enclosure of some butchers, and it is immediately slaughtered, and appears in their market stalls, and is sold to their customers!

It is not difficult to detect tainted meats, but it requires the greatest vigilance and watchfulness to discover the dangerous frauds practiced upon the public in the sale of diseased and unborn meats. Again, it happens not rarely that cattle taken from cars and steamboats in a dying condition—after being transported long distances, and subjected to terrible treatment—are at once slaughtered for market. Animals, under such circumstances, cannot make proper and wholesome food. Ample time and good care are necessary to restore them to health—and it sometimes requires months to eradicate the prostration and disease arising from the cruel packing, bruising, hungering and thirsting which they have endured during transportation.

The investigation of the subject of unwholesome and diseased meats, both in this country and in England, reveal a state of things in connection with it which is absolutely disgusting and sickening.

The importance of being able to distinguish good meat from bad is thus apparent, and therefore a few very simple and intelligible directions will be given, pointed out by the celebrated Doctor Letheby, in his "Lectures on Food." They should be learned by heart by every housewife:

Good meat has the following characteristics:

1st. It is neither of a pale pink color, nor of a deep purple tint, for the former is a sign of disease, and the latter indicates that the animal has not been slaughtered, but has died with the blood in it, or has suffered from acute fever.

2nd. It has a marbled appearance, from the ramification of little veins of fat among the muscles.

3rd. It should be firm and elastic to the touch, and scarcely moisten the fingers—bad meat being wet, sodden and flabby, with the fat looking like jelly or wet parchment.

4th. It should have little or no odor, and the odor should not be disagreeable, for diseased meat has a sickly, cadaverous smell, and sometimes a smell of physic. This is discoverable when the meat is chopped up and drenched with warm water.

5th. It should not shrink or waste much in cooking.

6th. It should not run to water, or become very wet on standing for a day or two, but should, on the contrary, dry upon the surface.

7th. When dried at a temperature of 212 degrees, or thereabouts, it should not lose more than 70 to 74 per cent. of its weight, whereas bad meat will often lose as much as 80 per cent.

VARIOUS ADULTERATIONS.

Butter is adulterated by the addition of chalk, lime and other substances to increase its weight, and annotta or other powdered dyes to impart color to it. These adulterations may be detected by evaporating a sample of butter on a hot plate over the fire, when the foreign substances will remain.

Lard is too often an offensive compound of diseased animal fats, potato flour, carbonate of soda, and caustic lime.

A large amount of canned fruits, vegetables, pickles, and sauces is adulterated with mineral poisons, which are pernicious in their effects upon the human system. Among the substances employed are arsenite of lead and copper, copperas, verdigris, plumbago, graphite, and sulphuric acid.

Mustard, pepper, ginger, and cinnamon are adulterated with various substances, among which chiccory is prominent. Various seeds of worthless plants, and sundry kinds of earth and mineral dusts are frequently added in quantities of twenty to fifty per cent. Othe.

substances, to give color and flavor to these frauds, are added, such as chrome yellow, carthamine, etc.

Cayenne pepper is universally adulterated, and most of it sold by dealers is unfit for use. Much of it contains admixtures of vermillion, brick-dust, red lead, cochineal and cantharides.

Prepared yeasts are in many instances made from refuse grain, particularly from putrified fermenting material which is rejected for any other use.

Custard and egg powders are adulterated with wheat, rice and potato flour, colored with chrome yellow and chromate of lead and turmeric.

Curry powders are a mixture of compounds that have previously been adulterated.

Potted meats are, to a great extent, a conglomeration of offensive odds and ends of slaughter and packing houses. They should be rejected unless prepared under your personal supervision.

COMMON SENSE RULES.

Coffee can be browned or roasted at home, and then no adulterations enter into its composition. A spice mill will obviate the necessity for tests to discover frauds in ground spices and condiments. With a meat-cutter the sausage, hashes, and mince-meats may be prepared at home. A little labor will supply pickles, sauces, and canned fruits. These, and many other things that are desired and consumed at the table, may be provided pure and wholesome at small cost.

A very large amount of the vinegar of commerce is prepared by using dangerous acids. When made from malt liquors it is yellowish red; when from wine, a deep red; and when from cider a pale yellow. Sulphuric acid when present forms a white precipitate with a solution of chloride of barium; copper yields a precipitate on the addition of hydro-sulphuric acid, and so does lead when iodine of potassium is added. These are the chemist's tests. The presence of the dangerous acetates of copper in pickles, sauces, preserves, teas, and liquors may readily be detected by adding liquid ammonia to the suspected article. Agitating the ammonia dissolves the copper, forming an intense violet-blue solution.

Syrups are often prepared by using dangerous chemicals. They can be detected by mixing them with a decoction of tea. Such syrups will form a black mixture. Good syrups subjected to this test will not change the color of the decoction.

Every housewife can apply the common sense rules above indicated in detecting adulterations of food, and the necessity of doing so is evident. But there is both safety and economy in the adoption of the means, when possible, that render some of these rules unnecessary.

BREAD—TESTS AND ADULTERATIONS.

Experience has everywhere shown that bread made from the cereal grains contains more of the essentials necessary to the support of adult human life than any other article of food. To the cereal grains may be added buckwheat, which, although belonging to a different family of plants is, nevertheless, in its composition, analogous to the cereal grains.

Our remarks, for the present, will be limited to the consideration of bread made of wheaten flour, the superior advantages of which, as an article of food, consists in the great variety of its component parts; it is virtually a mixed diet. When carbonic acid gas is in any way formed in, or forced into, dough made of wheaten flour, so as to divide it into a number of little cavities previous to, or during the process of baking, bread is made. This is ordinarily accomplished by one of the following methods:

1. By mixing the flour with hot water and adding yeast or leaven, and kneading it into dough, fermentation takes place: carbonic acid is disengaged, but the tenacity of the gluten prevents its escape, and the dough is in consequence distended into a cellular mass. A portion of the starch is converted into dextrine and sugar, which process also yields carbonic acid, and generates some alcohol, but this is all expelled by the process of baking.

Lactic and butyric acids and extractive matters are also formed in small quantities. While these changes are essential to the conversion of flour into bread, it is of importance to prevent their going too far, and herein is one of the arts of the baker. Ostensibly to prevent excessive fermentation, alum is added to check it, which also possesses the quality of incorporating an excess of water and increasing the weight of the loaf.

In making bread by this process, the proportions are: 20 lbs. of flour; 8 to 12 lbs. of warm water; 4 oz. of yeast, a little mashed potato, and 1 1-2 to 2 oz. of salt. 6 1-2 lbs. of dough should yield 6 lbs. of bread.

2. Carbonic acid is also disengaged by mixing soda and cream o' tartar with dough, or by the use of baking-powders, which are compounds of the salts of sodium and ammonium, and tartaric, phosphoric, and citric acids.

3. *Aerated bread.*— This is made by forcing carbonic acid through the dough by means of pressure. This process has the advantage of rendering it impossible for the conversion of starch into dextrine and sugar to go too far, and also has the effect of arresting the excessive

generation of lactic acid. From 20 to 25 cubic feet of carbonic acid, obtained by the action of sulphuric acid on chalk, are used for a barrel of flour; and about one-half of the carbonic acid is actually incorporated with the flour.

A barrel of flour will make from 63 to 73 *good* 4 lb. loaves of bread. The baker always endeavors to incorporate as much water as he can, to increase the number of loaves.

Good bread only contains about 33 per cent. of water. All over this proportion is excess.

The lightness or sponginess of bread is its chief attribute in digestibility. Common salt stiffens the dough, whitens and flavors the loaf.

The composition of wheaten flour, according to the mean of fourteen analyses after Peligot and others, as given by Dr. Parkes is as follows:

WHEATEN FLOUR AND BRAN.	—In 100 parts—	
	FLOUR.	BRAN.
Water,	14	10.3
Fatty matters,	1.2	2.82
Nitrogeneous substances insoluble in water (gluten),	12.8	10.84
Nitrogeneous substances soluble in water (albumen),	1.8	1.64
Non-nitrogeneous soluble substances (dextrine, sugar),	7.7	5.8
Starch,	50.7	22.62
Cellulose,	1.7	43.98
Salts,	1.6	2.52

Everything else being equal, the greater the amount of gluten in flour, the more valuable it is, because the more nutritious; and this it is which gives the flour of wheat its chief distinction — it contains more gluten than any other. Gluten is easy of digestion and highly nutritious, and flour which contains it in greatest abundance is proportionably valuable. The whiteness of flour is no criterion of its good quality, as the bran, or colored crust of wheat, contains a larger proportion of gluten than the more central parts of the grain, and, besides, all of the fatty matter and most of the salts. Bread, therefore, made of flour from which the bran has not been separated is, for well persons, both more nutritious and more wholesome. But for the sick, and especially for persons affected with bowel complaints, bran bread, or flour from which the bran has not been separated, is sometimes fraught with mischief. Very finely sorted flour that is purely white — by the total abstraction of the coloring matters — is frequently one-third less valuable in the quantity of bread it will make, than other of less whiteness, owing to the presence of a larger proportion of gluten. The proportion of gluten also depends somewhat upon the climate in which the wheat is grown, that of warm climates being the richest. And to this quality is due the superior fitness of flour in the south of Europe for the manufacture of macaroni, vermicelli, and Cagliari paste — which is almost pure gluten. Hence it is of paramount importance, in estimating the value of flour, to ascertain the proportion of gluten it contains.

Amount of Moisture.— To get at the amount of gluten present the sample must first be examined for moisture, for this is not only one of the most common frauds in bread, but a frequent *wilful* adulteration of flour. As already shown, the proportion of water naturally present in good flour is about fourteen per cent. If flour before packing, is exposed to a damp atmosphere, it very readily absorbs moisture, even to a destructive extent — insomuch that it will heat, ferment, and clod; and such flour will be found to have increased from twelve to fifteen per cent. in weight. The effect of excessive moisture in flour is to destroy the adhesive property of the gluten and render it unfit for bread; it also favors the growth of *mold* which renders bread poisonous. The quantity of moisture in flour can be ascertained by heating it. Take any given quantity—*n. g.*, 100 grains—spread it out on a plate, and carefully dry it over a stove, oven, or hot air bath for an hour, not allowing the temperature to exceed 200° F. lest the flour be scorched, which may be inferred by change of color, and if so, it should be discarded and the experiment repeated. Weigh directly the flour is cold, and the loss in weight represents the percentage of water.

Amount of Gluten.—Having first ascertained that the flour does not contain an excess of moisture, let a weighed quantity be made into a stiff paste and stirred with a glass rod for half an hour; then put it into a fine sieve, or gauze strainer, and submit it to a gentle stream of clear water until it ceases to impart a milky color. There will remain on the strainer a pale, dirty grey mass, of a fibrous structure, very adhesive, ductile, and extremely elastic. This is *crude gluten.* This, according to Hassall, is a compound of no less than four distinct substances, namely, gluten, vegetable fibrine, a very small quantity of mucine or caseine, and oil, in the following proportions:

Gluten, ...	20.
Vegetable fibrine, ...	72.
Mucine (casine?)	4.
Oil, ...	3.7
Starch (accidental), a small quantity, . .	
Crude Gluten, ...	99.7

The quantity of *crude* gluten in good flour, when dried, is about

17 per cent., but in the best Southern flour it sometimes amounts to 22 per cent.

Pure Gluten is obtained by boiling crude gluten in alcohol and evaporating to dryness. In its composition it closely resembles muscular fibre. Of this the best flour contains 14 per cent., and flour which yields less than eight per cent. should be condemned.

Bakers usually determine the quality of flour by the tenacity of the dough — the length to which it may be drawn into a thread, or the extent to which it may be spread out into a sheet. In disputed questions of quality, and in army and navy contracts, it is often necessary to make several determinations of gluten, or to adopt such means as will secure the utmost degree of accuracy. In France, particularly, the amount of gluten in flour is usually measured by instruments.

Boland's *Aleurometre*, or flour measurer, consists of a copper cylinder about six inches long and three-quarters of an inch in diameter. It has two principal parts; the one about two inches long is closed, forming a kind of cup, capable of containing half an ounce of fresh gluten; it screws into the remainder of the cylinder. The cylinder being thus charged, is heated over an oil bath to about 420° F. The gluten by this treatment swells, and according to its rise in the tube, which may be measured by a graduated stem, so is the quality of the flour. Good flour will furnish a gluten which augments to four or five times its original bulk, rising in the tube to above the 40th degree; but inferior gives a gluten which does not swell, becomes viscous and nearly fluid, adhering to the sides of the tube, and giving off occasionally a disagreeable odor, while that of good flour merely suggests the smell of hot bread. If the gluten in its dilatation does not rise to the 25th degree of the graduated tube, the flour may be considered as unfit for making bread.

The more simple instrument of M. Robine, the *Appreciateur*, is based upon the property of dilute acetic acid, of dissolving out the gluten of albuminous matter in flour without affecting the other constituents; the density of the solution being the measure of the richness of the flour in gluten. The *Appreciateur* is, therefore, merely an ingeniously devised hydrometer, in such wise graduated as to indicate the number of four-and-a-half pound loaves which can be made out of a sack of three hundred and fifty-four pounds of flour. It is evident that a scale could be adapted to one hundred and ninety-six pounds with equal facility.

The directions are: take acetic acid and dilute it with distilled water until the *Appreciateur* sinks in it to its 93d degree. The liquid then being cooled to 59° F., mix the flour in as many times twelve ounces of the acetic acid as there are drachms of the flour used for the experiment. Take, for example, one ounce of flour, after grinding it well in a mortar; add six pints of the acid, triturate with the pestle ten minutes in order to faciliate the solution; then pour the mixture in a vessel immersed in water at the temperature of 59° F. By letting it stand an hour the starch will have subsided, and the milky-looking fluid which holds the albuminous matters and the gluten in solution may be decanted, and the *Appreciateur* immediately applied. The degree to which it sinks indicates the number of four-and-a-half pound loaves that can be made out of the 354 lbs. If the quality of the flour is good, the *Appreciateur* will mark from 101 to 104.

By saturating the acid used in M. Robine's test with bicarbonate of soda, the gluten will abandon the acid and float on the surface. It may be collected and washed, when it will be found to possess all of its characteristic properties. While the simplicity of M. Robin's instrument places it within the comprehension of every one, it may be used with the greatest confidence. Those who have tried it state that it may be relied on even to the designation of half a loaf in a French sack.

Quality of the Gluten.—Next to the quantity of gluten, its quality is of most importance. The gluten of pure wheat flour, when well washed, is *of light yellowish color, very adhesive and homogeneous, resembling a fine quality of glue.*

ADULTERATIONS.—The quality of gluten is changed, and its quantity lessened, by the following adulterations of flour:

Moisture.—Already described.

Corn meal.—The gluten is more yellow, harder, and not easily spread. Corn meal may be detected by adding a solution of caustic potash to a mixture containing it, when a clear greenish-yellow color will be produced.

Rye flour.—When this is present the gluten is dark-colored, shiny, and easily separated.

Barley flour.—This gives the gluten a dirty red color; it is easily separated into masses, but can be drawn out into filaments, which quickly dry and become contorted.

Oat meal.—By this the gluten is changed to a yellowish black color, and a number of fine white specks appear on the surface.

Pea meal.—The gluten is obtained with unusual facility by a mixture of this substance with flour, but it is of a greenish color, and has the characteristic odor of peas.

Bean meal.—Somewhat like the last in giving off the peculiar odor of beans, but renders the gluten hard to obtain and much altered in properties; instead of being adhesive it is slippery, not easily spread, and of light yellowish color.

Buckwheat Meal. — The gluten is homogeneous and as adhesive as pure gluten, but it is of a dark grey color, and grows darker still by drying.

Potato starch and Rice flour.— These only dilute the gluten of flour without changing its quality. As they principally consist of starch, *it* becomes the adulteration to be tested. For this purpose take a small portion of the flour to be examined, and add to it an equal quantity of fine sand. By triturating this mixture in a hand-mortar, the starch-granules are broken up; then add water, a little at a time, until a homogeneous paste is formed. Let the mixture stand a short time and filter it. To the filtered liquid add an equal quantity of iodine water. If the flour be pure the liquid becomes of a rosy tint, inclining to red, but the coloring quickly disappears. If starch has been added the solution is violet colored and slowly disappears.

Ergot.—There is no very good test for this when ground up with flour. Laneau's plan, as given by Dr. Parkes, is to make a paste with a weak alkaline solution, add dilute nitric acid to slight excess, and then alkali to neutralization; a violet red color is said to be given if ergot is present, which becomes very red by the addition of more nitric acid, and violet when alkali is added.

Another kind of fraud is practiced by the addition of various earthy and mineral substances. The chief of these are the various compounds of *lime: marble-dust, plaster-of-Paris, chalk, bone dust, alabaster dust, mineral white* and *gypsum*; ALUM, PIPE-CLAY, SOAP-STONE, AND SULPHATE OF COPPER.

Lime is added to give increase of weight, and in bread making to cause it to combine a larger quantity of water. On account of the salt used in bread, when lime is present the *chloride of lime* is formed, and this, even in small quantities, is an active irritant poison. Lime may be detected by precipitation from any solution containing it. After letting the milky fluid obtained in washing out the gluten stand long enough to settle, pour off the clear water; carefully turn out the cake at the bottom and dry it. The top of this (being the bottom of the sediment) usually contains such adulterations as may have been added to give weight — white sand is sometimes observed. Take a portion of this sediment, burn it to ashes, and to these add nitric acid. If lime is present there will probably be effervescence: but to be sure, neutralize this acid solution with ammonia, and add oxalate acid, and it will be rendered certain by the deposit of oxalate of lime. Suspected bread may be reduced to ashes and treated in the same way.

Alum is one of the most common of all adulterations; added to flour to make the bread white, and to facilitate the incorporation of water. The usual effect of its use on the system is astringent, but on some persons, irritant. To detect it, reduce the suspected sample to ashes, add nitric acid, evaporate to dryness, and add distilled water. Filter this, and divide it into two portions; to one add a solution of chloride of barium and to the other ammonia. If alum is present the chloride of barium will throw down a dense white precipitate, and the solution of ammonia a light precipitate, which is soluble in a weak solution of caustic potash.

Pipe-clay contains *alumina*. Its effects are similiar to alum. To discover it, dissolve the ashes containing it in a solution of potash; to this solution add ammonia, and the substance in question is precipitated.

Magnesia is laxative. Its effect on flour is similar to alum. This and *soap-stone*, which is a compound of it, or any other substance containing magnesia, may be detected by first treating the ashes from the suspected sample for the detection of lime. Then filter the remaining liquid, and add to it chloride of ammonium and a little ammonia. Should the ammonia cause a precipitate, carefully add more chloride of ammonium, in small quantities, until it is redissolved; then stir in phosphate of soda until it ceases to precipitate. Let it settle, and phosphate of magnesia is the result. By repeated washings with a mixture of water and ammonia it may be purified, and its exact proportion determined.

Sulphate of copper.—Owing to the peculiar virtues this substance is said to possess in regenerating spoiled flour, and in increasing the quantity of bread which any flour will produce, it has in some places become a common adulteration. It is a powerful irritant poison, and however small the quantity used, the human system can by no possibility become accustomed to it. Sooner or later, *poisoning* must be the effect of this substance habitually taken. Its most common effect is irritation and inflammation of the lining membrane of the stomach and bowels. If there is much in flour or bread, it may be detected by triturating a sample in distilled water and adding a solution of ferrocyanide of potassium, which causes a reddish brown precipitate. But to be sure, treat the ashes of the samples with nitric acid, and afterward heat the mixture until nearly all of the free acid is expelled. Boil the residue in distilled water and filter it. To the filtered liquid add a solution of ammonia and a few drops of a solution of carbonate of ammonia. On cooling there will be a copious precipitate. Filter the liquid and heat it to expel the excess of ammonia, and add a few drops of nitric acid. Divide the liquid into two portions; to one add ferrocyanide of potassium, and to the other hydrosulphuret of ammonia. If there is the least particle of copper present, the former will give a reddish precipitate, deep colored in proportion to the quantity of copper present, and the latter a brown precipitate.

"An easy mode of detecting large quantities of mineral substances is given by Redtenbacher; the flour is strongly shaken with chloroform; the flour floats while all foreign mineral substances fall. This is a very useful test."

Such are the means for testing the quality of, and the detection of adulterations in wheaten flour and bread. But however simple the directions and sure the means, the arts of the impostor frequently require investigation at the most skillful hands. Fortunately for the welfare of mankind, there are natural characters pertaining to all substances, which no art, however wily, can change.

For the discovery of the various mixtures of flour, meal, starch, etc.,— to the practiced microscopist — no other means is so simple nor so accurate as the microscope. Under it the various sizes and shapes of the granules in different substances are displayed with unerring certainty.

ADULTERATION OF MEDICINES.

It might reasonably be supposed that, however general the system of popular poisoning in articles of our every-day consumption, which are taken generally when the body is strong and healthy, those powerful and active elements which we apply to our physical ailments and take into our system at those critical periods when the least elements antagonistic to our welfare may turn the balance against life, would at least be safe from dangerous mixtures. That this is not so, and that life is most recklessly endangered, and sometimes sacrificed through fraudulent medicines, the analysis of our principal drugs testify to.

To such an extent is this criminal tampering with life resorted to by unscrupulous drug-dealers that it is only upon analysis that we can be sure that the articles we take as remedies may not prove disastrous in their results, and for which results our physicians cannot be answerable. Drug poisoning was principally conducted by foreign manufacturing and exporting houses, until legislative enactment was laid upon all drugs imported, the result of which was not to diminish the sale of dangerous mixtures, but to transfer the foreign fraudulent drug manufactures to our own country, and to raise up home firms, so that it is questionable if the sale of dangerous drug adulterations has not largely increased. As an evidence of the extent to which this business is carried on, we have a report of the amount of condemned and rejected drugs arriving in United States ports in one year, showing a summing up of *ninety thousand pounds* thus dealt with! Three or four times this amount is not an extravagant estimate of the amount manufactured in our own country, and an *expose* of nearly all the principal elements composing our popular medicines would show an alarming extent of such criminality, and lead to most beneficial results.

Opium.—The best Turkey opium of drug establishments under examination will show that very many samples do not have a single particle of the principle of the genuine drug, but are entirely composed of numerous cheap oils, sand, dust, ashes, gums, aloes, leads, stones, seeds and stems of other plants, and in fact almost anything that will make bulk and weight. Some of these adulterations may be detected with the eye; others are most difficult to be distinguished, and so far is their application carried that it is more the practice to analyze the material called opium for the principles of this drug which are not always found, than to test for adulterations, which are ever present. If opium has a dark, uneven color, an adhesive consistency, a clouded fracture, an odor like burnt oil, colors the saliva a dark brown, and leaves a pale brown stain when rubbed on paper, it is impure. Good opium has a reddish brown color, a compact, uniform texture, and becomes gradually hard without moulding when kept. The simplest mode for detecting its presence and quantity is that given by the Edinburgh College: Macerate one hundred grains in two fluid ounces of distilled water for twenty-four hours, filter and strongly express in a cloth, treat the filtrate with a cold solution of half an ounce of carbonate of soda in two waters, when a precipitate will be found, which, when dry, will weigh at least ten grains, and is soluble in oxalic acid. A good quality of opium should give not less than ten per cent. of morphine.

Quinine, owing to its high price and the increasing demand for it, is extensively adulterated. Salicine, boracic acid, sulphate of soda, phosulphate of lime, margaric acid, gypsum, chalk, magnesia, borax, mannite, sugar, ammonical salts and arsenic are the forms of only some of its admixtures. Quinine may be tested by incinerating a sample of it, when inorganic substances will be left as an ash. Concentrated sulphuric acid turns salicine, if present, to a blood-red solution, and starch, sugar, or other organic matters, brown or black. Starch forms a deep blue compound with solution of iodine. Arsenic is detected by agitating quinine in water and passing sulphurated hydrogen into it, when a yellow color is produced. Hydrochloric acid throws the arsenic into a yellow precipitate, and when reduced to a solution by aqua ammonia and dried and heated with soda flux, yields metallic arsenic. Sulphate of quinoidine, treated in acetic acid containing a few drops of tincture of iodine, the mixture heated and allowed to cool, gives a brown precipitate, while the quinine of commerce resolves itself into a green crystalline preciptate, under proper treatment.

Peruvian Bark.—Fully two-thirds of this invaluable tonic are spurious barks, which deceive our dealers by containing kinovic acid and having a bitter taste, but are entirely destitute of the valuable alkaloids which form the active principles of the genuine barks. A solution of sulphate of copper will give a greenish precipitate from an infusion of spurious barks. Tannic acid added to an infusion of genuine Peruvian barks which have been filtered, will form an insoluble compound by combining with the peculiar alkaloids of the bark and precipitating them as tannates, while spurious barks will yield no precipitate. Again, the genuine barks, when submitted to dry distillation, gives a bright red product, which is not furnished by any other bark substituted for it.

Iodine is adulterated with plumbago, sulphide of antimony and peroxide of maganese, all of which may be detected by their insolubility in alchol, or by the residue left on heating iodine on mica to volatize it.

Scammony, used largely as a powerful drastic purgative, never reaches us pure, and the cake scammony of commerce is considered a fair article if it contains twenty per cent. of the genuine principle. Carbonate guaiacum, cow manure, bone dust, ground clays and plaster, and common resins and gum form the other eighty per cent. A dangerous, fictitious article, largely used in our markets, is made from the juice of Cynanchum Monspeleacum mixed with various cathartics and resins.

Carbonate of lime and alkaline mixtures in scammony may be detected by their effervescing with muriatic acid. Starch forms a blue precipitate with tincture of iodine, and guaiacum, if present in a sample applied to the surface of a raw cut potato, will turn it blue. Fictitious resins may be detected by subjecting them to contact with sulphuric acid, when they will immediately develop a deep red color, while the pure resin of scammony will undergo no change.

Calomel (sub-chloride of mercury) is one of the most powerful of our drugs, and requires extreme care as to the condition of its elements before administering. It is subject to a number of adulterations, but is most injurious through hasty and unskilled preparation, arising from the desire of its manufacturers to cheapen its cost to them and to increase its weight and bulk by not removing improper elements from it. It may be adulterated by any white powder, but corrosive sublimate, or bichloride of mercury, free mercury and arsenical compounds are most to be guarded against, and as it is always mixed with more or less of these, it should be most carefully washed and tested before being employed. Agitate it in cold water, and if, on the addition of sulphuret of ammonium, it gives a black precipitate, it contains corrosive sublimate. When of a gray color it contains free mercury, but when free it is completely volatized by being heated with the glass tube with the spirit lamp, giving a white sublimate. Pure calomel in powder will sink in water and will become black on treating it with ammonia; if in pills, dissolve them in water, wash the precipitate and test with ammonia. Arsenic may be detected in the same manner as in quinine.

Tartar Emetic suffers from mixtures of lime, clays, some of the forms of copper, iron and arsenic. When lime and substances of a similar nature are present, oxalite of ammonia added to its aqueous solution shows a white precipitate; copper gives a brown precipitate under ferro-cyanuret of potassium, and iron a blue one. If sulphuric acid or sulphurates are present in the solution, chloride of barium will cause a white precipitate, and nitrate of silver a similar one when hydro-chlorates are present. It is a useful drug in severe cases, but may work direct evil if not pure.

Cream of Tartar (Bitartrate of potassa).— This famous diuretic and laxative suffers largely from spurious mixtures of white minerals and organic matters as well as from fraudulent culpability in its preparation. Tartrate of lime occurs in it to an extent of eight to twenty per cent., and may be detected by agitating with a solution of caustic ammonia, filtering, and again adding oxalite of ammonia, which forms a white precipitate of lime. Ferro cyanuret of potassium gives its solution a reddish brown color if copper be present, and sulpho cyanuret of potassium a red color when iron is the adulteration. Carbonate of lime is detected by effervescing with weak acids; starch, by the blue color iodine gives; alum and bisulphate of potassa by chloride of barium, causing a white precipitate not soluble in nitric acid, and mineral powders by their insolubility in nitric acid.

Epsom Salts (Sulphate of Magnesia) suffers from many of the mixtures to which cream of tartar and tartar emetic are liable, and also from unsafe impurities in its preparation. Chlorides of magnesium and calcium will occasion the evolution of hydrochloric acid gas when the salts are acted upon by sulphuric acid. Potassa is present when tartaric acid gives a crystalline precipitate on being agitated in a concentrated solution of the salts. Copper may be detected as in cream of tartar, and iron shows its presence by the salts in solution giving a bluish black precipitate with tannic acid.

Jalap.—The resin met with in our markets is largely adulterated with guaiac and other spurious resins and oils whose properties are incompatible with the active principles of the genuine substance. Most of these may be detected by their order. Alcohol dissolves the genuine resin. Jalap root should be compact, dry and dark, with many shining lines and points; if light, whitish, spongy and friable, it should be rejected. The genuine powder should have a pale, grayish brown color, and occasion coughing, with an increased discharge of saliva.

Copaiva, a valuable stimulant, cathartic and diuretic, seldom contains less than thirty per cent. of fraudulent mixtures, which are principally oil of turpentine and the common fixed oils. The fixed oils, except castor, can be detected by agitation with alcohol, when they separate and gather at the bottom. Turpentine manifests itself by the odor when the substance is heated. Pure copaiva, when mixed with sulphuric acid, becomes plastic and reddish, while castor oil will not thicken or color.

Creosote, a powerful irritant and narcotic, is often rendered very impure and its principles greatly neutralized by imperfect distillation, and by the addition of incompatible oils and coloring materials. It may be tested by subjecting it to concentrated acetic acid, in which it is soluble, while its adulterations are not. Fixed oils may be detected by the creosote leaving a stain on paper not removable by heat.

Officinal Dilute Acid, or diluted sulphuric acid, is a most valuable element in medical practice as an astringent in Asiatic cholera, dysentery, etc., and as a tonic, but is seldom found without a long list of dangerous mixtures, which threaten to neutralize its beneficial properties and work evil instead. Arsenic may be detected by the Marsh test, lime, by treating the acid with an excess of ammonia, and adding oxalite of ammonia, which forms a white precipitate, the elements of allumine, by an excess of ammonia, forming an almost colorlorless precipitate; of selerium, by diluting with alcohol, when it settles in a red powder; and of lead, when sulphureted hydrogen is passed through the diluted acid, forming a brown precipitate or discoloration.

Croton Oil is very liable to be adulterated with castor and other common oils, and with the expressed principles of spurious seeds and plants, which are difficult to detect. Absolute alcohol will dissolve castor oil, while it has little effect on the croton; the genuine oil should form a uniform, transparent mixture with equal parts of alcohol of a specific gravity of O. 796.

Olive Oil, commonly called sweet oil, contains as much as fifty per cent. of adulteration with lard and fish oils and poppy. To test olive oil, agitate three ounces of it with two drachms of protonitrate of mercury for two minutes, when, if pure, it will thicken immediately, and in twenty-four hours will be a concrete mass; but if other oils are present it will not be acted on in this manner.

Cod Liver Oil is freely adulterated with the cheaper fat oils, and may be tested in this way: The pure oil should contain not less than 0.020 parts of iodine, and samples containing less than this amount are mixed with non-remedial oils; again, the genuine oil never gives up its iodine to alcohol or water, while other fat oils readily yield it when added to them.

Cajeput, a valuable essential oil, highly prized for its medicinal qualities in southern countries, and used among us as a powerful stimulant, is, owing to its price, largely adulterated. Oils of lavender, origanum, turpentine and rosemary, combined with camphor and milfoil resin, are often palmed off for the genuine oil. Cajeput may be detected from other oils, except rosemary, by nitric acid imparting a brownish red color and occasioning violent reaction, and the formation of liquid balsam. Iodine occasions a reciprocal action with yellowish red vapors, and, if pure, the oil will leave no residuum.

These adulterations of oils with each other, which might be extended to every form of them, do not at first view seem dangerous, but when we remember that the mixing of a genuine oil with a spurious one may not only neutralize the desired principle of the genuine remedy, but introduce elements entirely antagonistic to the nature of the complaint, we may understand where the danger really lies. Thus we can imagine how croton, or oil of turpentine may work most alarming results when administered to a patient requiring a gentle aperient like olive oil. But there is also used in the adulteration of these oils balsam of copaiva, resins, oil of bitter almonds—a violent poison, and other spurious oils obtained from the leaves and bark of the peach, plum and bay laurel, and substances yielding the poisonous hydrocynic acid.

The most of our people are powerless to remedy this wrong, and they must demand safety from the physician and apothecary. Every physician understands that while a remedy prescribed by him, if properly prepared, may be most excellent in its effects, any inattention to the quality and purity of the agents composing it may prove most disastrous in its results. *Upon the purity of the remedy must rest a great share of his success.* It is, then, his profit, and should be the object of the apothecary, to see that the latter is furnished with pure, unadulterated drugs. How easily this end may be attained and one of the worst forms of popular poisoning destroyed, by every honest apothecary submitting to the simple tests that should be familiar to him a sample of the different remedial agents which he may desire to purchase from time to time, and by the physician carefully perceiving the effects of the remedies applied, and when he discovers that medicines are impure by simply exposing the fact.

THE HOME CABINET.

GENERAL AND DOMESTIC ECONOMY.

Ammonia — Its Properties and Uses.— Ammonia, in its pure state, is a pungent volatile gas of alkaline properties. A bottle of the spirits of ammonia should always be kept in every house, for, besides its medicinal value, it is invaluable for various household purposes. Its cost is so small that none need be without it. Here are some of the uses to which it may be applied.

Put a teaspoonful of ammonia into a quart of warm soapsuds, dip in a flannel cloth, and wipe off the dust and fly-specks, grime and smoke, and see for yourselves how much labor it will save. No scrubbing will be needful. It will cleanse and brighten silver wonderfully; to a pint of hot suds mix a teaspoonful of the spirits, dip in your silver forks, etc., rub with a brush, and then polish on chamois skin. For washing mirrors and windows it is very desirable; put a few drops of ammonia on a piece of newspaper, and you will readily take off every spot or finger-mark on the glass. It will take out grease-spots from every fabric; put on the ammonia nearly clear, lay blotting-paper over the place, and press a hot flat iron on it for a few moments. A few drops in water will clean laces and whiten them as well; also muslins.

Then it is a most refreshing agent at the toilet table; a few drops in a basin of water will make a better bath than pure water, and if the skin is oily, it will remove all glossiness and disagreeable odors. Added to a foot-both it entirely absorbs all noxious smells, so often arising from the feet in warm weather, and nothing is better for cleansing the hair from dandruff and dust. For cleansing hair and nail brushes it is equally good. Put a teaspoonful of ammonia into one pint of warm water and shake the brushes through the water and put them in the sunshine, or in a warm place, to dry. The dirtiest brushes will come out of the bath white and clean.

For medicinal purposes ammonia is almost unrivalled. For headache it is a most desirable stimulant, and the frequent inhaling of its pungent odors will often entirely remove a catarrhal cold. There is no better remedy for heartburn and dyspepsia, and the aromatic spirits of ammonia is especially prepared for these troubles, and ten drops of it in a wineglassful of water, are a great relief. The spirits of ammonia can be taken in the same way, but it is not as palatable. A writer in the *Medical Journal*, London, states that in case of whooping cough in the last stage — that is after the third week — he has had one ounce of the strongest liquid ammonia put into a gallon of water in an open pan, and the steam kept up by means of half a brick made red hot throughout, and put into the boiling water containing the ammonia, the pan being placed in the middle of a room, into which the patients were brought as the ammonia steam was passing off. The method, he says, was used in the evening, before bedtime, and it proved so efficacious in abating the sporadic attack, and after three or four days terminating the malady, as to establish, beyond doubt, the value of this mode of inhaling ammonia as a therapeutic agent in tranquilizing the nervous system in the whooping cough.

In addition to all these uses, the effects of ammonia on vegetation are beneficial. If you desire roses, geraniums, fuchsias, etc., to become more flourishing, you can try it upon them by adding five or six drops of it to every pint of warm water that you give them, but do not repeat the dose oftener than once in five or six days, lest you stimulate them too highly. Rain water is impregnated with ammonia and thus it refreshes and vivifies vegetable life. So be sure and keep a large bottle of ammonia in the house, and have a glass stopper in it, as it is very evanescent, and also injurious to corks, eating them away.

Disinfectants.— It is very necessary to know how to purify the air of a room of noxious gases and putrifying substances or particles which contain the germs of disease. To do this it is necessary to employ substances that possess the power of combining with these gases and convert them into comparatively harmless compounds. But it should always be borne in mind that the employment of these means to purify the atmosphere of rooms and other places containing vitiated air must be accompanied by good ventilation, plenty of sunshine and perfect cleanliness. In cases of typhus or other infectious fevers so large an amount of organic matter is thrown off that the ozone contained in the air of the sick room is unable to decompose it. We must therefore resort to other means to remove it.

Liquid perfumes are often employed to remove unpleasant smells in the sick room, and pastiles composed of various resinous and aromatic substances are ignited to accomplish a like result. While these things may disguise any unpleasant smell, that may be present, they are useless to destroy any infection in the atmosphere. So sprinkling vinegar about a room, occupied by a sick person, serves only to

A solution of the chloride of zinc, (known as Burnett's Disinfecting Fluid) is employed for purifying rooms occupied by the sick. It is prepared as a disinfectant, in any quantity, by dissolving as much ordinary zinc in commercial hydrochloric acid as that fluid will take up. During the solution the chlorine of the acid unites with the metal, forming a chloride, while the hydrogen, the other constituent of the acid, escapes in considerable quantity. A word of caution is proper here. The gas which escapes during solution forms an explosive compound when it combines with the oxygen of the air, and hence, in preparing the fluid let the windows be open; or prepare it in the open air. In the sick-room the liquid is poured into saucers and placed around the apartment.

Another disinfecting substance is produced by adding a few drops of strong sulphuric acid to a small quantity of chlorate of potash and loaf sugar, powdered and mixed together. The sulphuric acid may be added by means of a stick or piece of glass rod. This combination evolves a disinfecting gas. The chlorate of potash and sugar must be powdered separately and afterwards mixed. For mixing use the feather of a quill pen on a sheet of white paper. In using the sulphuric acid be very careful that none is spilled on the carpet or clothes, as it will destroy the portion of the fabric with which it comes in contact.

The fumigation of rooms that have been occupied by persons who have suffered from infectious fevers and other dangerous diseases, is sometimes necessary. Chlorine is, at present, used more for disinfecting such apartments than any other agent, yet sulphur is still employed for this purpose. It is sometimes burnt by itself and sometimes mixed with nitrate of potash (saltpeter). In either case it combines with the oxygen of the air, producing a compound known as sulphurous acid gas. This gas possesses great power as a disinfectant; when it meets with sulphureted hydrogen (in the atmosphere) the latter is at once decomposed by it, the oxygen contained in the acid uniting with the hydrogen to produce water, while the sulphur of both is set free. But any organic infectious matters it meets are immediately destroyed.

The agent now most in use for fumigating rooms is chlorine gas. The readiest and cheapest means of obtaining this gas are these: Take two pounds, by weight, of commercial hydrochloric acid, to which add one pound of the black oxide of manganese; apply heat and chlorine gas is liberated in abundance. Glass or earthenware pans should be used for these substances, as they are not acted upon by the acid or chlorine, while metals are. Thenaud's formula for obtaining this gas is as follows: Four parts of salt, one of black oxide of manganese, two of hydrochloric acid, and two of water.

When an infected dwelling is to be fumigated it should be closed up and made as air tight as possible. After it has been fumigated sufficiently the doors and windows should be thrown open to freely admit light and air.

The gas injures steel grates and other metallic articles, and these should either be removed or covered with a coat of varnish previous to fumigation.

It is prudent for a person entering a house immediately after it has been fumigated to have a wet sponge tied before the mouth and nostrils in order that the water contained in the sponge may absorb all the chlorine from the air taken into the lungs.

Precautions against Fire.—Accidental fires, or what are usually called so, are not so much the result of accident as of carelessness. A very large per cent. of the fires which destroy so many thousands of dollar's worth of property annually might be prevented by observing a reasonable degree of caution.

Thus the real cause of many fires is carelessness; carelessness in the management of friction matches, fires in grates, gas, candles and lamps. Matches are very useful articles, but by reason of their cheapness they are used unsparingly and carelessly, thus endangering property, and, indeed, causing vast losses every year. They should be kept out of the reach of young children, who should be taught that they are not to be permitted to handle them. Very often, after it has been ignited and used, a match is thrown away before the fire upon it is entirely extinguished. If it happens to fall among combustible materials it is very likely to ignite them, and thus numerous fires originate.

Cigars, from which the fire has not been extinguished, and the burning remnants of tobacco, from pipes, carelessly thrown away, contribute largely to swell the number of so-called accidental fires.

Candles and lamps are often lighted with pieces of paper which are thrown away being only partially extinguished, and thus numerous fires occur. A paper light may be easily put out by a steady puff from the mouth. Candles are more dangerous than gas-burners, from the fact that they are movable; and lamps are, for the same reason, not as safe as gas-burners, but being protected by glass they are preferable to candles.

The practice of reading in bed is unwise, for a light placed sufficiently near to the reader to be of service, is not generally at a safe distance from the bed. A common candle ought not to be left burning when persons retire for the night. If it is desired to keep a light burning during the night let it be a floating or night light surrounded by water. Such lights are far more safe.

Gas sometimes is the cause of serious accidents, nevertheless it is preferable as a safe light, to movable lights. When not in use, it is the safest plan to turn off gas at the main to prevent its escape through leaks in pipe or burner. In cases where the smell from escaping gas is offensive, open the doors and windows. Beware of taking a light into a room until the smell of gas has passed off.

Among other precautionary measures against fires, do not leave a large fire burning at bed-time. A small one should be guarded by a wire fire-guard. Light combustible articles in the vicinity of the grate should be removed. Ashes and cinders should not be put in a bucket or other vessel and set in a closet or hall to be emptied afterwards, nor should they be thrown against a wooden building or fence. Though apparently dead, they may not be so. A great many fires occur from carelessness of this description. There is more danger in this respect from wood ashes than from coal ashes, from the fact that the former retain heat longer than the latter.

To check a fire when first discovered keep doors and windows closed, for air rapidly supplied is a great feeder of fire. Wet blankets and rugs economize water and are more effectual in extinguishing and preventing the spread of fire than water used with but little discretion.

Here are some common-sense suggestions in regard to what should be done in case of an alarm of fire. They are not new but are none the less valuable on that account. When an alarm of fire breaks out remember that much depends on your remaining calm and collected. Take time for consideration and do not act precipitately. Call to mind what modes of exit there are from the house before going upwards or downwards. If you are in bed and have not time to dress, roll yourself in a blanket, rather than a sheet or counterpane, as the former will be some temporary protection against fire. Shut, and keep shut, all doors and windows. If the smoke is so suffocating that you cannot breathe standing, go on your hands and knees — within a foot of the floor there will always be air that can be breathed ; a wetted silk handkerchief, or a piece of flannel over the face will permit breathing and keep out smoke. If you can make your way neither upwards nor downwards, get into a front room, and if there is a family, see that they are all collected there. Do not throw yourself from a window, or permit others to jump out of it, unless there is a "jumping-sheet" held below; but if you have no rope, tie sheets and blankets together by the corners and thus make one; fasten one end to a beam or piece of furniture and let down the women and children by tying the other end round the waist; lastly you can slide down it yourself.

In cases where your clothes take fire on your person, do not rush about wildly. Be as calm as possible and endeavor to retain your presence of mind. If you are alone, seize any loose rug or woolen article, if such be near, and wrap it tightly about you; this will extinguish the flames at once. If nothing of the sort is at hand, and there is no one near to help you, keep your clothes as tightly about you as possible and try to put out the flames by rolling on the floor. If a man is present when a woman's clothes catch fire, he should get a shawl, or if it is not at hand, let him take off his coat and wrap it around her. She should lie upon the floor, and avoid moving about.

Chimneys on Fire. — A few handfulls of common salt, thrown into the fire in the grate often checks this trouble; or scatter flowers of sulphur over the dullest of the coals; the mephitic vapors thrown off will check the combustion. A wet carpet or blanket drawn tightly across the fireplace to cut off the current of air up the chimney will check the fire. Closing the top of the chimney should not be resorted to, for this drives the smoke downward into the room. Pouring water down the chimney is not advisable as this damages furniture and carpets. It is not a good plan to set chimneys on fire to clean them, even where no danger is imminent, for the great heat generated injures the walls of the building; but chimneys in constant use ought to be swept whenever they become foul.

Smoky Chimneys.— A smoky chimney is an abomination, an enemy to health, comfort and cleanliness, and a nuisance not to be endured.

Smoky chimneys result from various causes. In the first place the cause is attributable generally to bad construction of the chimney; again it may arise from setting a stove or range so as to interfere with the draft in the chimney; or it may result from a lack of the necessary currents of air.

Whatever may be the hight, size or mode of construction, all chimneys are controlled by the currents of air either from below, above, or both. These may be regulated in such a way as to cause a chimney to draw properly.

A few general principles should be kept in view in the construction of chimneys. These are set forth in a general way in THE HOME GUIDE, when speaking on the subjects of "Ventilation," "Warming the House," etc. It will be borne in mind that heated air expands and rises. The coolest air of a room is nearest the floor, while that which is warmest rises to the ceiling. Thus it is plain that a current of cool air must be admitted into a room to force the heated air and smoke up the chimney in such a manner as to prevent its return, else the latter will be driven down the chimney and into the room. In nearly all cases the cause of this evil of a smoky chimney will be found to arise from imperfections in the flue. It may be too contracted; or the inner surface may be too rough; or there may be openings into it which admit cold air that chills the flue and ascending current; or it may occur because the opening of the fire-place is too large; again, too large and exposed an aperture at the top may be presented. In the latter case the wind sometimes strikes down into it and forces the smoke down into the room. This is very likely to occur when the top of the chimney is lower than an adjacent house, or below the level of a neighboring hill or clump of trees. An insufficient amount of air in a room in which there is a fire-place will cause a chimney to smoke for the reason that a circulating current is thus prevented; if a door or window is opened the obstruction is removed in this case. It sometimes happens that two chimney flues come down into one room, or into two rooms which connect by an open passage; an upward current in one flue where a fire is burning may be supplied with air drawn from the other flue. In order to make the latter chimney draw, it would be necessary to close the connection between them or supply air for the first flue from another source. Sometimes the top of a chimney is contracted by ornamental pots and by sharp angles, thus obstructing a free current of air, rendering the chimney foul so that it will smoke. These things can be easily remedied. When a chimney is below the level of surrounding buildings, and the wind drives the smoke down, the remedy is to increase the hight, or else draw in the flue at the top. The effect of the latter change is to admit a smaller quantity of air, and this is dispersed through the large body in the flue without being felt at the base. Should this not prove effectual a similar contraction in the throat of the fire-place will remedy the evil. A chimney-top or pot is also useful in short chimneys, provided this appliance is so constructed as to prevent a rush of air downwards. Various kinds of ventilators and chimney-tops have been devised to prevent rush of air down the chimneys, and some of them give perfect satisfaction. The Archimedean Screw Ventilator and Chimney-top is much employed as is also the Nonpareil Ventilator and Chimney-top. Other similar devices are used that give satisfaction.

The following extract from the American Cyclopedia's article upon Chimneys is in point: "The late A. J. Downing, who gave particular attention to all subjects connected with house architecture speaks of contraction as the principle of building chimneys to draw well. The back of the fire-place in his plan is made sloping forward as it rises from the hearth. When nearly as high as the breast of the fire-place (that is, the top of the open space in front) the back is built vertically for about a foot, passing thus at least six inches higher than the bottom of the breast. It then makes a square jog back to the posterior wall of the flue. This flat shoulder is deemed essential, chimneys having been made to smoke when the right angle was filled with mortar. The under edge of the mantel or breast next the flue should always be rounded off, the effect of this being to cause the air passing into the flue from the room to mix gently with the smoke without causing any sudden disturbance. For chimneys of moderate size or depth at the throat, the distance from the mantel to the back wall should be about four inches, and the length of the opening such that multiplied by its depth, the area will be equal to that of the flue above. For the top of the chimney in very windy or exposed situations, the rule is to contract the flue to a third less than its area below. Ordinarily the drawing in of a twelve inch square flue to ten inches is sufficient, and where there is no likelihood of downward currents the contraction at the throat may answer."

Smoke Stains on Marble Mantels.—Apply benzole to the stains and carefully rub them off by means of a very clean soft rag. If the stains should not be removed at the first application, it must be repeated until all the marks are removed.

To clean colored marble mix together a gill of soapsuds, a gill of ox-gall and half a gill of turpentine. Mix these together with as much finely powdered pipeclay or fuller's earth as will form a rather stiff paste. Apply with a brush, using a small brush to get into the flutings or fine work. Allow this to remain on the marble for two or three days; wipe it off, and should it not be sufficiently cleaned by a first application, repeat the operation two or three times. Oil of vitriol, or lemon-juice applied to stains in marble, will remove them after rubbing the places with a soft cloth for twenty minutes.

White marble—that which is used for ornaments and carved mantel-pieces is generally the finest—should never be cleaned with soap and water, as it injures it very much; if rubbed with a silk handkerchief or soft cloth every day it will be kept clean. Grease stains may be removed from marble by applying a little magnesia finely powdered or salt of tartar. Allow it to remain on the spot a few hours; then wipe it, and apply again if the spot has not entirely disappeared.

Another way to clean marble is to take one part of finely powdered chalk, one part pumice-stone and two parts common soda, powdered. Sift all through a fine sieve and mix with water; rub it over the marble and the stains will be removed; wash off with water or weak soap-suds.

Still another method of cleansing common marble is to simply wash the surface with warm soap-suds, and polishing afterwards with a fine dry cloth or leather. Stained or much soiled marble may be much improved by boiling equal parts of soft soap and powdered whitening, say four ounces each with one ounce of soda. When thoroughly blended, lay the mixture on while hot and let it remain for a day or so. Afterwards wash off with clean water, and dry with leather.

Sweeping and Dusting.— Before a room is swept it is best to remove all light articles of furniture out of the way and cover up those which would be injured by the dust. The window curtains should be drawn and pinned up as high as you can reach. Open the windows a few inches, top and bottom, and shut the door. It is well to turn the front of pictures to the wall, and to hang a sweeping-sheet over looking-glass frames, mirrors, etc. Sprinkle tea-leaves, drained, but not dry, over the carpet, especially in the corners. Sweep all carpets the way of the pile, whether it be in one direction or another. While the dust is settling, clean the grate. If the fire-place is in use, all the ashes should be removed from the grate before sweeping the carpet. To sweep the cornice, ceiling and walls, tie a soft cloth over a hair broom. In the absence of tea-leaves coarse brown paper, moistened with clear water, will answer the purpose. Without something of this kind the dust will only be driven from one part of the room to another. A painter's brush is very suitable for dusting skirtings. White dusters are best for chintz furniture. A small feather broom should be used for raised china and gilt work. Never wipe picture frames with a duster. Carved wood-work should be dusted with a short-haired furniture brush. Piano-forte keys should be dusted with an old silk pocket-handkerchief kept for that purpose.

Cleaning Windows.— The first thing to be done is to take precautions against the chance of accident by falling. Dust the window-sashes first with a round brush called a painter's brush. Take a piece of wash leather wetted in *cold* water to which soda has been added, wash one pane at a time. Then wring out the wash-leather and wipe the glass, then polish with a piece of dry wash-leatner. Other methods are used but this answers every purpose. Linen and cotton rags are not suitable for washing windows as they are more or less fleecy in their nature, and it is difficult to remove their lint from the glass.

*Whitewash and Whitewashing.**— For an ordinary-sized room, the following materials will be required: — Two cakes of common whitening, one pound of double size, a small cake of laundry blue, and about a tablespoonful of ground alum. The whitening should be placed in a pail, and warm water poured over it until it can be mixed into a thin paste. The size should then be melted in an old saucepan and added to this. Then the blue, which has previously been dissolved, should be well stirred in; and, finally, the ground alum. This latter will cause the mixture to effervesce considerably; and when this disturbance is over, the whole should be strained through coarse canvas or a fine seive. When cold it will be ready for use. If several rooms are to be whitewashed, it will be better to mix the quantity at once, which will effect a considerable saving of time and material.

Before commencing the work, the ceiling should be carefully examined, in order to ascertain what repairs will be needed before whitewashing. It frequently happens that an old ceiling has been cracked and stopped over and over again, and badly whitewashed, until it is extremely rough and ridged over its whole surface. All these irregularities should be removed. Commence in one corner; and, with a brush and a pail of clean water, wash off all the old whitewash, and remove the irregularities with the edge of the trowel. If any cracks or holes are left, these should be carefully stopped with the mixture of whitening and plaster, using the putty-stick and not the trowel for the purpose. The whole should then be brushed down with plenty of water until the surface is smooth and even.

The whitewashing may now be proceeded with. The brush, being perfectly clean, may be dipped into the color about half way up the hair, and just dabbed gently against the side of the pail, to remove that which is superfluous, and prevent its dropping about. The mixture should then be applied to the ceiling, brushing it about in various directions, and finally finishing it off by drawing the brush along in straight lines, to smooth the color down. When as much of the work is covered as can be conveniently reached, the ladder or steps may be moved, and a fresh space be covered, always taking care to keep the fresh part of the work well worked into that which is already done. Of course, the greatest care must be exercised in completely covering the whole of the ceiling, in order to avoid dirty uncovered patches. The more rapidly the work can be executed, the better will be the result; provided always that each part is well done.

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*Cassell's Guide.

In the above directions we have supposed that the ceiling is simply a plain one, and not enriched or decorated either by cornices or center flower. If, however, these are present, we should advise that they should be covered first, if they are intended to remain white. If the work be intricate and very much undercut, a smaller brush than the ordinary whitewash brush will be required; that known as a painter's sash tool, and about an inch in diameter, will answer well. With this the color should be worked into every part of the enrichments, especial care being required in this particular.

A far better effect is, however, produced, if the enriched work, such as the center flower and cornice, are slightly tinted. This involves very little extra trouble, and a very rich effect is produced. The tint selected should harmonize with the paper which is to be placed, or is already on the walls; and, as a rule, any of the paler grays will be better than very decided tones of color. If this tinting is to be adopted, the body of the ceiling should be whitewashed first and the enrichments afterwards tinted.

In this paper we have supposed the room to be undergoing thorough repair, and that the paper was to be removed; hence we have not given any particular caution against splashing the whitewash over the walls. It frequently happens, however, that a ceiling is dirty before the paper is damaged. In this case no splashing can be allowed. A very good plan is to procure a few yards of brown carpet paper, which should be pinned up against the wall nearest the work and removed as it progresses. There is really no need to make much mess over such a job; and a little care will suffice, provided that a good brush be used. In conclusion, we would remind the tyro that the difficulty of obtaining a good and even coating over a ceiling increases in proportion to its size; consequently, he had better confine himself to small work until he has acquired some little experience.

A brilliant whitewash is made as follows: Take half a bushel of nice unslacked lime, slack it with boiling water, cover it during the process to keep in the steam. Strain the liquid through a fine seive or strainer, and add to it a peck of salt, previously well dissolved in warm water; three pounds of ground rice, boiled to a thin paste, and stirred in boiling hot; half a pound of powdered Spanish whiting, and a pound of clean glue, which has been previously dissolved by soaking it well, and then hanging it over a slow fire, in a small kettle within a large one filled with water. Add five gallons of hot water to the mixture, stir it well, and let it stand a few days covered from the dirt.

It should be put on hot; for this purpose it can be kept in a kettle on a portable furnace. It is said that about a pint of this mixture will cover a square yard upon the outside of a house if properly applied. Brushes more or less small may be used according to the neatness of the job required. It answers as well as oil paint for wood, brick or stone, and is cheaper. It retains its brilliancy for many years. There is nothing of the kind that will compare with it either for inside or outside walls.

Coloring matter may be put in and made of any shade you like. Spanish brown stirred in will make red pink, more or less deep according to the quantity. A delicate tinge of this is very pretty, for inside walls. Finely pulverized common clay, well mixed with Spanish brown, makes a reddish stone color. Yellow ochre stirred in makes yellow wash, but chrome goes further, and makes a color generally esteemed prettier. In all these cases the darkness of the shades of course is determined by the quantity of coloring used. It is difficult to make rules because tastes are different; it would be best to try experiments on a shingle and let it dry. We have been told that green must not be mixed with lime. The lime destroys the color, and the color has an effect on the whitewash, which makes it crack and peel. When walls have been badly smoked and you wish to have them a clean white, it is well to squeeze indigo plentifully through a bag into the water you use, before it is stirred in the whole mixture. If a larger quantity than five gallons be wanted, the same proportion should be observed.

Whitewashing Walls.— Sulphate of baryta has been strongly recommended as a substitute for lime in whitewashing walls. Its advantages are said to be numerous. The mode of using it is as follows: Four ounces of glue are soaked for twelve hours in tepid water, and then placed, until boiling, in a tin vessel with a quart of water. The vessel being placed in water, as in the usual process of boiling glue, the whole is then stirred until dissolved. Six or eight pounds of sulphate of byrata, reduced to an impalpable powder, are put into another vessel, hot water is added, and the whole stirred until it has the appearance of milk of lime. The sizing is then added, and the whole stirred well together and applied in the ordinary way whilst still warm.

Useful Cements.— A great many kinds of cement have been discovered, but it is not necessary to enumerate them all. Only those which are considered the best will be given.

The Japanese cement is made from ground rice. It is prepared by thoroughly mixing the rice flour with cold water and then boiling it to a paste. For pasting paper together it is excellent.

A superior kind of colorless glue for using with paper may be made by slowly boiling one pound of parchment cuttings in six quarts of water until the fluid is reduced to one quart. Then strain off the liquid and evaporate it down to the proper consistence for use.

A thick mucilage of gum arabic in water forms a useful cement, but it will contract when dry. Sugar and starch are sometimes added to prevent this. The proper proportions of these ingredients are, one part white sugar, three parts starch, four parts gum arabic; all the substances to be in fine powder and to be weighed. Mix the powders thoroughly, then add water gradually stirring the mixture until it assumes a proper consistence. The cement is then poured into a wide-mouthed bottle, and preserved for use. It must be carefully corked, as it soon dries, especially in warm weather.

There are several kinds of cements that are at once transparent and capable of resisting the action of water, and by means of which jewels, china, glass, and similar articles are repaired. Gum mastic is employed for this purpose by jewelers, for mending precious stones. The pieces are made hot, mastic is applied to each surface, the two surfaces are pressed into contact as tightly as possible and kept so until cold. Experts can join broken jewels together so deftly by this method that the fracture can scarcely be discovered. By this means impositions are doubtless practiced, for it is said that cameos of white enamel, or colored glass are often joined to a real stone as a ground to produce the appearance of an onyx. Mastic is also used to cement false backs or doublets to stones to alter their hue. Mastic varnish is also sometimes employed for the same purpose.

The jeweler's of Armenia use a very powerful cement to fasten gems to the outside of watch-cases, and similar uses. It is made this way: Soak isinglass in water until it swells and becomes soft; it is then dissolved in spirits with two small pieces either of gum galbanum or gum ammoniacum. Then five or six pieces of mastic about the size of peas are placed in as much spirits of wine as will dissolve them. The two are mixed together and a gentle heat applied. The cement must be poured into a well-stoppered bottle, and closely corked. Whenever it may be required for use the bottle containing it should be placed in warm water, so that the cement will be rendered fluid.

An excellent cement for joining wood may be made by soaking isinglass or gelatine in water until it swells. The water should then be drained off, and spirit poured on it, and the vessel placed in a pan of hot water until the isinglass is dissolved. The cement should be kept in a well-stoppered bottle.

A valuable cement for mending broken vessels is made in this way: To half a pint of milk put a quantity of vinegar sufficient o curdle the milk; separate the curd from the whey, and mix the whey with the whites of four eggs, beating the whole well together; when mixed, add a little quick lime through a seive until it acquires the consistency of paste. With this cement broken vessels or cracks can be repaired; it dries quickly and resists the action of fire and water.

A cement for mending china is made in this wise: Mix together equal parts of fine glue, white of eggs and white lead, and apply it to the edges of the articles to be mended; press them together, and when hard and dry scrape off as much of the cement as sticks about the joint.

Cheese cement is made by washing some good fresh cheese with warm water until all the soluble matter is removed. Strain it thoroughly and it will then crumble like stale bread. Dry it upon blotting paper, and it will keep good for a long time. When required for use a portion of the prepared cheese is pounded with a little quicklime, which changes it into a sticky mass. It may then be brought to a proper consistence by means of warm water. When ready it must be applied at once, as it soon dries and cannot be melted again. This is a strong and valuable cement for china, earthenware, glass, wood, etc. The quicklime and prepared cheese can be kept together in a stoppered vessel, if mixed quite dry and in a fine powder; or they may be kept in separate vessels ready for amalgamation.

Diamond cement, which is colorless and resists moisture, is made as follows: Soak isinglass in water till it becomes soft, and then dissolve it in proof spirit. To this a little gum galbanum or ammoniacum and a little gum mastic, dissolved in as small a quantity of alcohol as possible, should be added, and the mixture may be put in a phial and should be closed with a good sound cork, and not with a glass stopper, as the latter would be liable to become fixed with the cement. When the contents are required for use, the phial may be placed in boiling water, and they will thus be rendered liquid; the cement should be applied to the broken edges with a feather, or, better, a camel's hair pencil. A little isinglass dissolved with gin, is essentially the same as the above, and may be used instead of it, when the better and more carefully prepared cement is not to be procured. In all cases it is important that the fractured edges of broken china should not be chipped or rubbed otherwise it will be impossible to mend them either strongly or neatly, and for this reason it is well that the mending should be done as soon after they are broken as possible.

A cement for fastening India-rubber to wood is formed by dissolving one part of powdered shellac in ten times its weight of the strongest solution of ammonia. They form, when mixed together, a mass of a slimy consistence, which after three or four weeks becomes liquid. When applied to India-rubber it softens that substance and causes it to adhere tightly to metal or wood. After it has been exposed to the air for a time, the ammonia volatizes, and the cement becomes hard and prevents the escape of both air and fluids.

Facts About Glue.—The best way to prepare glue for use when its full strength is required, is as follows: The glue as bought should be broken up small, just covered with water and allowed to soak for a few hours. It should then be placed near the fire and allowed to simmer. A few drops of linseed oil is sometimes added. When made it should be kept in a dry place, as dampness will totally destroy its tenacity and render it worthless.

To make liquid glue, take a pint of water, a pound of good glue, and gradually dissolve the glue in the water, which may be done by setting the vessel containing them in another containing hot water and keeping all hot. As it cools, add little by little three ounces of nitric acid. Bottle it when cold in stoppered bottles. It will not set, will keep for a very long time and may be used for any purpose almost, for which gum arabic is used as a cement.

Another method of making liquid glue or cement is to take of crushed orange-shellac four ounces. of rectified spirits of wine (strong) or rectified wood-naptha, three ounces. The rectified spirit of wine makes a far superior composition, but the other is good enough for all ordinary work. Dissolve the shellac in the spirit, in a corked bottle in a warm place; frequent shaking will assist in dissolving, and it should also be shaken before use. The composition may be used as a varnish for painted wood.

A liquid glue or cement for joining paper or pasteboard in making card boxes and similar articles of fancy work is thus prepared:—Take two ounces of the best glue or gelatine and dissolve by a gentle heat in a quarter of a pint of strong vinegar. Then add to it —for the purpose of making it keep—one ounce of the rectified spirits of wine, or any other strong spirit. It must be kept in vessels tightly closed.

A cheap and useful cement is made by dissolving one ounce of borax in a pint of boiling water, adding two ounces of shellac and boiling in a covered vessel until the shellac is dissolved. This cement answers well for pasting labels on tin, and withstands dampness much better than common glue.

The following cement may be found useful in fastening metal on glass securely and rapidly. To an intimate mixture of two parts of finely powdered silver-litharge, and one part of dry white lead, add as much of a mixture of three parts of boiled linseed oil and one of copal varnish as will form a doughy mass. It is only necessary to cover the lower face of the metal with this cement, press it upon the glass and remove the excess of cement.

A serious drawback to the use of gum arabic as an adhesive, is found in its showing through unsized paper, and thus producing a semi-transparent blot. This is also attended with the still greater inconvenience that the two layers do not stick together satisfactorily. On this account gum arabic mucilage cannot be used for attaching paper to pasteboard, nor wood to wood, nor one metallic substance to another, since the gum soon peels off. All this inconvenience may be remedied, it is stated, by adding to the gum a solution of sulphate of alumina, two parts of crystalized sulphate of alumina, answering for one hundred and twenty-five parts of the concentrated solution of gum arabic, in the proportion of two parts of gum to five of water. The salt is to be dissolved in ten times its weight of water, and the solution mixed direct with that of the gum solution, which in this condition well deserves its name vegetable glue.

Marble Varnish.— In another part of this work,— "How to Paint" — will be found directions for various kinds of painting. In using marble varnish, the ground-work must be prepared the same as for imitation of fancy woods, letting the last two coats be of stone yellow. When the ground is quite dry add broad patches of raw Sienna and white paint, the patches of white being less in size and of less decided forms; while freshly done these should be blended with a piece of soft wash-leather. When partially dry, describe with a hair pencil between the patches, broad veins of a mixture of dark blue and Venetian red, with a feather, passing over these veins, a broader, irregular tracing of a fainter, more plum-colored line which may be formed of the remnants of the last named colors, thinned, and a little lake added, with some additional fine veins in this color. When dry the work may be varnished with the following colorless varnish.

Select copal and test it with the essential oil of rosemary to ascertain whether it will soften at its touch; such pieces as will not soften must be rejected. Grind the selected copal to powder and lay it in a glass vessel to the depth of a quarter of an inch and pour upon it about the same extent of the essence of rosemary, stirring it with a white stick until the copal is dissolved. After a while add a little pure alcohol, letting it run over the surface, and so continue to do till the varnish has become nicely fluid. In a day or two it will become beautifully clear and fit for use. Great care must be taken to keep it free from dust, and it is advisable not to use the very last portion remaining in the vessel. Varnish should be laid on very evenly and firmly with a very clean brush.

Varnish for Grates.—A black shining and durable varnish is made as follows: Take oil of turpentine, add to it drop by drop, and while stirring, strong sulphuric acid until a syrupy precipitate is formed and no more of it is produced on further addition of a drop of acid. The liquid is now repeatedly washed with water every time refreshed after a good stirring, until the water does not exhibit any more acid reaction on being tested with blue litmus paper. The precipitate is next brought upon a cloth filter, and after all the water has run off, the syrupy mass is fit for use. This thickish magma is painted over the iron with a brush; if it happens to be too stiff, it is previously diluted with some oil of turpentine. Immediately after the iron has been so painted, the paint is burnt in by a gentle heat, and, after cooling, the black surface is rubbed over with a piece of woolen stuff dipped in and moistened with linseed oil.

Varnishes of Various Kinds.—The use of varnish is so extensive and varied that every one should know something of the different kinds and the uses to which each kind is especially adapted. The following article from an English publication contains, in concise form, useful information upon this subject:

"Varnishes are generally divided into the three classes of spirit, essential oil and fixed oil (or fatty varnish) according to the liquid in which the resins forming them are dissolved.

"The spirit varnishes are those prepared by dissolving resins in spirit of wine or naphtha. They are usually made by breaking the resins into small fragments, so as to allow the solvent to act the more readily on them, and are placed in a stone jar, or varnish tin, and the spirit or naphtha poured over them. The vessel is then placed in a warm situation for a certain time (the duration of which depending on the solubility of the materials employed), until they are entirely dissolved. When the resins require a higher temperature for solution, they are heated with the solvent in a vessel constructed for the purpose, surrounded by boiled water, by which they are kept at a moderate and uniform heat. These varnishes have the great advantage of being easily prepared, and they flow well from the brush, and can thus be readily applied, and when made with rectified spirit of wine they have no unpleasant smell like the other varnishes. When naphtha is used for this purpose, although it dissolves the resins more readily than spirit, it possesses a disagreeable odor. At the present time, owing to methylated spirit of wine being so much cheaper than pure spirit, it is almost exclusively employed for this purpose.

"When varnishes, in which the resins are dissolved in spirit or essential oils, are applied to any surface, the solvent evaporates, leaving a coating of the resin employed on the article varnished. But in the case of the fixed oil or fatty varnishes, the oil does not evaporate, but becomes converted into a solid coating, owing to the absorption of oxygen from the atmosphere.

"Varnishes prepared with rectified spirit of wine or naphtha, although when carefully made, dry rapidly, and with a bright surface yet have the great disadvantage of not being able to resist moisture. For this reason they cannot be employed for out-door work, where they would be exposed to the action of the atmosphere. Even for surfaces that are not so exposed, they are liable to crack and peel off, and are not so capable of resisting moisture as the other kinds of varnish.

"The second kind of varnishes, prepared with the essential oil, or spirit of turpentine, although they dry much slower than those prepared with spirit, are found to wear better.

"The third kind, known as the fatty varnishes, consist of resins dissolved by heat in drying linseed or walnut oil and turpentine. Although these varnishes dry slowly, not being so brittle as the other kinds, they are more durable. They are also so hard, that they are capable of being polished, and are able to withstand the action of wet. They are therefore the only kinds of varnish usually employed for out-door work, and other purposes where they will be exposed to the vicissitudes of the weather.

"When oil of turpentine is employed in the manufacture of varnishes, care should be taken to procure it as old as possible — varnishes thus prepared being found to dry quicker and harder, and wear better than when the new oil is employed.

"Linseed oil cannot be used in making varnishes until the mucilage it contains has been removed, since the mucilage, if allowed to remain, would prevent the varnish becoming dry and hard, in consequence of its hindering the absorption of oxygen from the atmosphere, by which the drying and hardening of the varnish is produced. Linseed oil may be rendered drying, by boiling it for a considerable time with some preparation of lead, such as the oxide. For this reason, the ordinary drying linseed oil is known in the shops as boiled oil. Sometimes other substances, such as magnesia, are employed, instead of the oxide of lead, for this purpose. The sulphate of lead is also employed in the following manner: — Rub up the linseed oil with some dry sulphate of lead, so as to produce a milky mixture, and pour it into a glass bottle. Place the vessel in a window, or other place where the light can gain access to it, for a week. During this time the bottle must be frequently shaken, to keep the sulphate of lead suspended as much as possible in the oil. At the end of the week the mucilage will be found deposited as a thick layer at the bottom of the vessel, and the linseed oil may then be poured off clear. It may then be used for the manufacture of varnishes. When varnishes are made, it must be carefully remembered that, whether prepared with spirit, essential or fixed oils, the varnishes must never be kept in a damp place, otherwise they will absorb moisture, and becoming dilute, will deposit some of the resin they contain, and thus become milky. When this happens, the varnish is said to have become 'chilled.' The varnish may, however, be restored to its former condition by introducing some coarse and warm sand, which will absorb the moisture present.

"Common resin dissolved in boiling linseed oil forms a brilliant hard varnish, which is sometimes employed by house-painters for varnishing common out-door work, but it is found to wear badly and is very apt to crack and peel off.

"A similar varnish is also prepared by dissolving the resin in oil of turpentine instead of linseed oil; but, although this preparation dries quicker than the last, it will be found to wear even worse than the other.

"Resin also enters into the composition of the common wax varnish employed for tables and other articles of furniture. This varnish is prepared by dissolving one drachm of resin and two ounces of bees-wax in one pint of oil of turpentine. In manufacturing this or any other kind of varnish, it is necessary to be very careful that all the resins employed, before being used, should be carefully washed in hot water, to remove any dust or dirt that may adhere to them.

"Shellac enters into the composition of many varnishes. When dissolved to saturation in strong liquid ammonia, it forms a varnish suitable for toys and similar articles. When dry, the surfaces thus coated look well, but they must not be exposed to the action of moisture. A colorless shellac spirit varnish may be thus prepared:— Put five ounces of shellac in two pints of lightly rectified spirit of wine, and, when dissolved, bleach the resin by the addition of ten ounces of recently-prepared animal charcoal, and strain the clear varnish for use through silk (not linen, which absorbs too much of the fluid) and afterward through filtering paper. Shellac is usually purchased already bleached for varnish-making. This is done by passing a current of chlorine gas through a mixture of shellac in water until the color is quite removed and the resin becomes perfectly white. When seven and a half ounces of bleached shellac are dissolved in one pint of rectified spirit of wine and then strained, and one and a half pints more spirit are added, it forms an excellent hard and durable varnish for white wood furniture.

"Shellac spirit varnishes very often contain sandarac, especially those employed for white or light wood, but the addition of this resin will be found to render them softer and less durable. A varnish for the inside of carriages is composed of pale shellac, ninety-five parts; sandarac, one hundred and ninety parts; common resin one hundred and twenty-five parts — dissolved in one thousand parts of methylated rectified spirit of wine, and then one hundred and ninety parts of turpentine are added. An excellent varnish for violins and similar musical instruments may be prepared with shellac, two parts; sandarac, four parts; mastic, two parts; elemi, one part. The resins are coarsely powdered, and then rubbed up with four parts of powdered glass; the resins are then digested at a gentle heat in thirty-two parts of methylated rectified spirit of wine until dissolved and two parts of Venice turpentine are afterwards added to the strained solution. Sometimes mastic is added to shellac varnish, as in the following form: — Pale shellac, seven hundred and fifty parts; gum mastic, sixty-four parts; dissolved in one thousand parts of methylated rectified spirit of wine.

"When the resins are being dissolved they should be frequently stirred, and the vessel well shaken. It is also necessary to place the jar containing them on warm bricks or in hot water. This varnish is used principally by cabinet-makers; it is thick, and is employed without being strained. If this varnish is diluted with a large quantity of proof spirit, it forms bookbinders's varnish, for the covers of books and similar purposes. It may also be used for the leather coverings of sofas and chairs.

"Mastic is a soft resin, and is met with in commerce in the form of mass, or tears. The latter, being the purest, should alone be employed in the manufacture of varnishes. When dissolved in oil of turpentine it forms a very pale varnish, which possesses peculiar brilliancy when dry, and which flows readily from the brush. This varnish is much employed to preserve oil paintings from the action of the atmosphere, owing to the ease with which the dried varnish may be removed, when soiled, from the surface to which it has been applied, by gentle friction with a soft linen cloth.

"A brilliant varnish, but which will not bear friction, may be prepared with mastic, thirty-two parts; sandarac one hundred and twenty-five parts; elemi resin, sixteen parts; dissolved in five hundred parts of methylated spirit of wine. When dissolved, thirty-two parts of Venice turpentine are to be added to the clear solution. Varnish for maps is prepared with six parts of mastic, and three of sandarac, rubbed up with four parts of powdered glass; the resins and powdered glass are then digested at a moderate heat in thirty-two parts of spirit until dissolved; three parts of Venice turpentine are afterwards to be added. Continue to keep the fluid at the same degree of heat until the turpentine is dissolved, and then strain through thin calico. The reason for using powdered glass in these and similar cases is to separate the portions of resin, and thus enable the liquid employed as a solvent to act on them the more readily.

"Three ounces of mastic, and half that quantity of sandarac powdered, and rubbed up with two ounces of crushed glass, dissolved in one pint of rectified spirit of wine, form an excellent varnish. To prepare it, the resins are placed with the spirit in the stone jar, or tin, and kept for three days in a warm situation, stirring or shaking the bottle frequently. When dissolved, take an ounce and a half of Venice turpentine, melt it and add to the varnish, stirring the whole frequently until dissolved. The liquid is then to be kept in the warmth for another week, and then strained.

"Copal is much employed in the manufacture of varnishes. The best kind of copal — which is very clear and pale — is known as 'body gum,' from being employed in varnishes used for the bodies of coaches. The next quality is named 'carriage gum,' and is used in the varnish applied to wheels and other parts of carriages. The inferior kinds are used for japan-black, gold size, and the commoner descriptions of varnish. Although gum copal is but slightly soluble in rectified spirit of wine, its solubility may be increased by powdering it, and then exposing it to the action of the atmosphere for about a year. It may also be rendered more soluble by melting the resin, previously to powdering. The solubility of copal in rectified spirit of wine is also increased by the addition of camphor or oil of rosemary.

"A cheap, but very disagreeably-smelling copal varnish may be prepared by dissolving powdered copal in equal parts of rectified benzole and spirit of wine. The varnish for the faces of Dutch clocks is prepared by melting four parts of clear gum copal in an iron vessel and applying heat carefully. When the gum melts, and ceases to give off vapor, one part of linseed oil, previously made hot, is poured in and well mixed. Then a sufficient quantity of oil of turpentine to form a varnish is added.

"Varnish for violins and similar articles is prepared in the following manner: — Melt some copal in an iron pan over the fire (taking care that it does not ignite) and then allow it to become cold, and reduce it to a fine powder. Put one ounce and a half of this copal into a pint of rectified spirit of wine, and add one ounce of mastic and half an ounce of elemi. Keep the varnish in a warm place, frequently shaking the vessel that contains it, until dissolved. Then add one ounce of melting Venice turpentine. In this and other preparations the elemi is added to make the varnish dry quicker. Varnishes which contain it, dry as hard as when made with amber. When dry they have a brilliant polish, but their employment is attended with the great disadvantage of being rather apt to crack. It is also found that varnishes thus prepared have a tendency to become darker when exposed to the atmosphere, which is a serious inconvenience if the varnish has been employed to varnish delicate-colored surfaces. A wood varnish, much employed for toys, consists of copal, seventy-five parts; dissolve, with the aid of camphor or oil of rosemary, in one part of rectified spirit of wine, and strain the liquid through linen; then put in thirteen parts of mastic, and dissolve it in the clear solution; lastly, melt six parts of Venice turpentine in a water bath, and add it to the liquid. This varnish dries well, and will be found to bear polishing. In preparing this and similar preparations, it is necessary to employ a moderate heat, to render the resins soluble, taking care not to employ a higher temperature than is absolutely necessary, as it will be found that the lower the heat at which varnish is prepared the more durable it will be when dry.

"A flexible copal varnish, for leather-work and similar purposes, may be prepared by dissolving eight parts of powdered copal in forty-five parts of oil of spike, to which one part of camphor has been previously added. The essential oil is made hot, and the powdered copal added in small portions at a time — a fresh portion being dropped in as soon is that previously added is dissolved. The copal varnish employed for the under portions of carriages is made by taking twelve parts of powdered copal which has been previously fused, and dissolving it in twenty parts of oil of turpentine and half a pint of camphor. When dissolved, if the varnish is not sufficiently thin, it may be rendered so by the addition of a sufficient quantity of oil of turpentine."

Staining Wood and Ivory.—The following are approved receipts for staining wood: To stain *black* first brush the article over once or twice with a hot decoction of logwood, and afterwards with a solution of copperas of iron dissolved in vinegar, or with common ink. To stain *red*—to a quart of water put two ounces of potash and two of Brazil wood, let them stand in a warm place for several days, and stir them up occasionally. While boiling, brush this over the wood, and repeat the application till it becomes of the required color; afterwards, and while the wood is still wet, brush it over with a solution of two ounces of alum to a quart of water. If the proportion of potash, to the other ingredients be doubled, it will give a rose red. To stain *purple*, boil one ounce of logwood and two drachms of Brazil-wood in a quart of water until the latter is reduced to a pint, then strain and brush it over the wood. A drachm of perlash must then be dissolved in a pint of water, and brushed over the wood when it has become dry. To stain *yellow*; To a pint of spirit wine, put one ounce of turmeric, and let the mixture stand three or four days after which it may be brushed over the wood. An orange stain may be made by the addition of a little gum tragacanth. To stain *mahogany*: In a quart of water boil half an ounce of logwood and one ounce of fustic, and brush the wood with it, which should be gone over afterwards with a weak solution of potash. The above will make a dark mahogany. Two ounces of madder used instead of logwood will give a lighter stain to the wood.

Ivory and bone, before being stained, must be thoroughly cleansed from the grease which they always contain. This may be done by dissolving a pound of saltpeter in a pint of water, and immersing the peices of ivory or bone in the solution. Tying them to a piece of string, and merely dipping them in the liquor will be sufficient and they must afterwards be plunged in cold water. *Black.*—In a quart of water boil a quarter of a pound of logwood for half an hour, and then steep the ivory in it. *Red.*—This is best done with the dye used in scarlet cloth. Half a pound of snippings of scarlet cloth should be taken and boiled in a clean earthen vessel, with an ounce of soap and three quarts of rain water. This should be stirred frequently, and allowed to boil half an hour; then strain and squeeze the cloth through a canvas bag into another earthen vessel, into which has been put as much powdered alum as will lie on a ten-cent piece; however, as these coins are seldom seen in these days perhaps it is better to designate the proper quantity of alum as one-third of what an ordinary thimble will hold. In the infusion thus produced, the ivory may be steeped until it is of the proper color. After the ivory has been removed from either of these boiling fluids there is danger of its cracking, but this may be avoided by putting it immediately into cold water.

After each successive brushing over with the stain (as directed in these receipts) the articles should be dried; and if a deep shade is required the wood should be boiled for some time in the liquid, instead of merely soaked with it. Whenever dye-woods are used it should be in the form of raspings or small chips.

To Remove Stains from Furniture.— In cleaning furniture much depends on the mode in which it was originally polished. The method of polishing most in use is what is known as the French polishing. In cleaning this kind of finish, a little spirits of turpentine should be employed, which will clear off grease and dirt without softening the varnish. It should be rapidly done. If the furniture was originally polished with furniture paste — composed of beeswax dissolved in spirits of turpentine by means of heat, and a little copal varnish or resin (finely powdered) with a small quantity of Indian red added — it should be renovated with the same composition. When furniture has been polished with oil, renovating or cleaning should be effected by means of linseed oil, slightly colored by a little alkanet root, which dissolves in oil aided by slight heat.

When furniture is in a bad state, but not stained, wash it with spirits of turpentine, and afterwards polish it with linseed oil colored with alkanet root. But if the furniture be stained or inky, it may be washed with vinegar warm; afterwards rubbing the stains with spirits of salts rubbed on with a piece of rag, which will remove all the stains. The wood may then be polished with linseed oil colored with alkanet root, or with beeswax dissolved in turpentine, with a little copal varnish or resin added.

To remove ink-stains from furniture, pour some lemon-juice on the ink-spot, rub it well with the finger. Then wipe it off with a cloth, and if the stain has not entirely disappeared apply more lemon juice, and continue to do this until the stains are removed.

To Remove Spots from Floors.— To a tidy housewife grease spots on the floor are an abomination. For removing them take equal parts of fuller's earth and pearlash a quarter of a pound of each, and boil in a quart of soft water, and, while hot, lay it on them for ten or twelve hours, after which it may be scoured off with sand and water. When a floor is much soiled with grease it should be thoroughly washed over with this mixture the day before it is scoured. Fuller's earth and ox-gall boiled together, is said to form a very powerful cleansing mixture for floors. Stains of ink may be removed by strong vinegar. Spirits of wine rubbed on the ink-stains upon floors, or mahogany, with a cork, and washed off with water will remove them.

Oil, or grease, may be removed from hearths by covering it immediately with hot ashes or burning coals.

To take away soot stains from a floor, dilute some sulphuric acid with water, and wash over the stained part. If the stains do not disappear make the mixture stronger and wash again.

To Clean Paint.— A very simple method of cleaning paint that has become dirty is this: Provide a plate with some of the best whitening to be had, and have ready some clean warm water and a piece of flannel which dip into the water and squeeze nearly dry; then take as much whitening as will adhere to it, apply it to the painted surface, when a little rubbing will remove any dirt or grease. Then wash the part well with clean water, rubbing it dry with a soft chamois. Paint thus cleaned looks as well as when first laid on, without injury to the most delicate colors. Soda should not be used in cleaning paint, and very little soap.

To take ink-stains out of paint, wash the spot with a cloth dipped in oxalic acid. In a few minutes wipe it off with a clean towel and cold water, and the spot will have disappeared.

To Clean Oilcloth.— Oilcloth should not be scrubbed with soda or soap. Daily sweeping and dusting, with ordinary care, of the oilcloth, will keep it clean a long time. Spots may be removed easily by rubbing with a little oil laid on with flannel. When it is necessary, to wash oilcloth it should be gone over with a flannel moistened with milk. Sweep off the dust, wipe the oilcloth with a clean flannel then wet with milk and rub with a dry cloth until bright.

Care of Books.— Books are vehicles of information, and should be thoroughly read, but they should also be well taken care of. They should not be abused. No one who cares for the contents of books can be indifferent to their appearance. In a family where the inmates are careless in this respect, more injury is done to books thereby than by much reading. Dust is very injurious to books. When a person is done with a book it is very easy to replace it on the shelf where it belongs.

It is an act of vandalism to permit children to use, as playthings, books intended for grown-up persons. Children can have their own books, and these are now so plentiful and cheap that they need not be without them. For the smaller children there are picture-books lined with cloth or printed on some suitable fabric, so that they may not tear them. Teach the children that books not suitable for them are not to be taken from the shelves by them.

Books that have been damaged by age, carelessness or accident may be partially restored. Ink-spots or writing may be removed by applying spirits of salts, diluted with five or six times their bulk of water, which must be washed off a minute or two afterwards. A solution of oxalic acid, citric acid, or tartaric acid will answer the same purpose. The printing will not be injured by either preparation.

Iron-mould spots may be removed by applying first a solution of sulphuret of potash, to render the iron soluble, and then by an application of oxalic acid.

Grease spots may be removed by laying powdered pipe-clay on both sides of the paper, and applying an iron as hot as the book will bear without scorching it. Or the grease spot may be moistened with ether, and treating the paper in the same manner, placing the leaf between sheets of white blotting-paper and applying the hot iron. When the grease has been removed all trace of stain will disappear if a brush dipped in rectified spirits of wine is drawn over the spot and especially round its edges. The print will not be affected.

Sometimes old books that have been much used are "dog-eared," and flimsy. The leaves may be partially restored. Make a solution as follows: One quart of water, one ounce of isinglass, one pound of alum. Take a camel's hair pencil and dampen the weak parts of the leaves with this preparation, and carefully spread out the dog-ears and creases. Then take a piece of clean paper to keep each leaf separate. When the leaves are somewhat dried, press them and the work is done. As but few leaves can be done at a time, if there is much to be restored, considerable patience is necessary.

In repairing torn leaves they may be mended in this way. Use book-binder's paste, adding gum arabic or glue to give it greater strength. Should the printed matter be torn across so that it is necessary to paste over it, ordinary tracing paper should be used to mend it, which will allow the type to appear.

Egg Stains from Silver Spoons.— The sulphur in eggs will discolor silver spoons by uniting with the silver and forming a sulphuret. The quickest and best way to remove the stain is to rub the spoon with salt between the thumb and finger.

Cleaning Plated Ware.—Both silver and plated ware should be washed with a sponge and warm soapsuds every time they are used, and wiped dry with a clean, soft towel. When wiped dry if the plate is not bright take a little gilders' whitening and add to it a few drops of spirits of wine or gin, making the mixture of the consistency of good batter; rub it on the plate with a piece of flannel or rag; rub the plate dry with wash-leather. A brush should only be used for the embossed work or plain plate.

Plated articles should not be left damp for any length of time, as they are liable to injury. After forks and spoons have been used for eating vinegar salads, pickles and the like, they should be cleaned immediately.

Plated and silver-ware needs constant care. Cleaning once a week with whitening or plate-powder is, as a rule, as often as is necessary, but if it is washed every day or two and rubbed dry with a leather kept for the purpose it will look better.

A very good powder for cleaning silver articles is composed of two parts of whiting, one part of white oxide of tin, and one part calcined hartshorn. Each article must be reduced to a very fine powder and then well mixed.

Another excellent preparation for cleaning plate and renewing its polish is prepared chalk and hartshorn mixed together. First, wash the plate with hot water then rub the mixture over it, rub it off with a piece of leather, and then polish with another piece.

If plate is laid away any length of time after use it should be rubbed with a little spirits of ammonia and water, afterwards rinsed in plain water to destroy the corroding effects of any salt that may be left on the surface. Silver castors, salt cellars, and other similar articles require especial care in removing all substances from their surfaces that will injure them.

Cleaning Urns.—Tea and coffee urns may be cleaned in this way: Rub together one part of rotten stone and two parts of oxide of iron, finely powdered, such as jewellers' use. This composition is to be rubbed on and rinsed off, the same as in cleaning plate.

To Clean Alabaster.— Take water and soap and brush the alabaster, then wash it with clean water, finishing with a clean, dry flannel. For brightening alabaster, a paste is employed made of whiting, soap, and milk. Rub over with this mixture and finish with a clean, dry flannel.

Alabaster ornaments may be cleaned in this way: To a pint of cold, filtered water, add two of aqua fortis, (nitric acid.) With this mixture touch all parts of the ornaments with a brush. It is well to have brushes of different sizes and use small ones for small ornaments. Rinse the alabaster with clear cold water, and set it in the sun to dry. Soap applied to alabaster discolors and soils it.

To Clean Decanters and Bottles.— Decanters and bottles that have contained hard water for some time become coated on the inside with a deposit of carbonate of lime, mixed with any other matters that the water may have contained. The easiest method of removing this deposit is to add a teaspoonful of hydrochloric acid (spirits of salts), and thoroughly rinse the bottle with it. The acid comes in contact with the deposit and at once removes it, forming a clear solution of chloride of calcium. The bottle should then be rinsed with plenty of clean water.

When decanters have stood for some time containing port or other wines, a deposit of coloring matter will be thrown down on the surface of the glass. This may be easily cleaned off by a little sulphuric acid, (oil of vitriol).

To Clean Gilt Lamps, Chandeliers, Etc.—Make some soapsuds with warm water and the best white soap, and after thoroughly wiping all dust from the article, wash it thoroughly, taking a small brush to reach the crevices. Then dry thoroughly by wiping the article with a soft handkerchief.

Management of Lamps. —Since petroleum became cheap, it has been adopted almost universally where there is no gas for illuminating purposes. And this is not to be wondered at for its small cost and the brilliant light it makes, admirably adapts it to household use. A prejudice exists, however, in some quarters against the use of petroleum lamps, arising from fear of explosion. Accidents occur from using them, but if only ordinary care be used there need be no more danger from them than from sperm oil or candles.

There are important points of difference between the lamps that burn petroleum and those in which oil is used. To properly manage petroleum lamps it is important to understand their peculiarities, and therefore we will explain their construction. The bowl or reservoir for the oil is of different patterns and styles, and need not be described; to it is fitted a metal flange or screw by which the upper part of the lamp is secured. Through this tube the wick passes connecting with the oil, and attached to the tube is a ratchet for raising and lowering the wick. A metal disc is placed across the tube where it joins the reservoir to prevent the escape of the oil. There is also a partition of perforated metal to steady the current of air admitted into the cylinder, and catch any particles of burnt wick that may fall. Above the tube is a dome through the top of which is cut an aperture which increases the draft and ensures the supply of a constant current of air to the wick during combustion. A glass chimney increases the draft still more and protects the flame from the wind, which is highly necessary, otherwise an unsteady flickering light will be the result.

The action of the apparatus is simple, and need not be described further than to speak of the necessity of keeping it in proper order. When the wick is inserted in the tube, and carried to the top of it by the toothed wheel, it should be cut square across, with a pair of sharp scissors; if any fibers of the wick are left upon it the flame will not be even, and the lamp is very apt to smoke; clip off the corners slightly. At first the flame should not be very large, for it will increase in size and intensity as the heat increases, probably breaking the chimney, giving off a dense black smoke and much soot. By turning the blaze on gradually the chimney is heated by degrees and is not so liable to break.

The mistake is made sometimes of turning up the wick above the dome. The light is not so brilliant, and an offensive smell is produced; this is caused by incomplete combustion of the oil. If the lamp is clean and has been properly trimmed, (provided of course, it is not defective in construction), no smell will be discovered, as perfect combustion precludes any disagreeable odor. The apertures and perforations through which air is supplied to the flame must be clear from obstructions. The following precautions to ensure perfect safety in using lamps for burning petroleum should be remembered: The wick should fit the tube; if it is too tight, a difficulty in working it up and down will be the first annoyance, while the oil may not be taken up by the wick in sufficient quantity to make a good light. But the wick should not be too loose, for there must not be any direct communication between the flame and the oil in the reservoir. Never attempt to fill the lamp with oil while the wick is burning; to this source the most of the accidents that occur from using kerosene may be traced. On no account should the lamp be placed where the temperature of the oil will be raised above the vaporizing point. Never set a lamp on a stove or range or in proximity to heated surfaces, for there will be danger of an explosion. In extinguishing a lamp turn the wick well down, and a puff of air blown a little upward and across the top of the chimney the flame will extinguish the light.

An explanation of the properties of petroleum, and of its preparation for household use, may be useful in correcting erroneous ideas entertained by some persons.

Crude petroleum oil as it comes from the wells is unfit for illuminating purposes, and it is therefore subjected to a process of distillation. This process removes the more inflammable portions, known as kersoline and benzine, both of which are dangerous. When these products are removed the ordinary burning oil remains, and this, if properly prepared, does not explode or give off inflammable vapor at ordinary temperatures. Thus it will be seen that good petroleum oil is perfectly safe, provided ordinary care is observed.

To test the oil, pour a little into a saucer, and apply a lighted match to the surface; good oil will not ignite, and the burning match will be extinguished by plunging it in the oil; if the oil ignites it is not safe and should be rejected. Explosions are caused by a mixture or combination of petroleum vapor with atmospheric air, and this will not explode except when in actual contact with flame.

It will be seen that due care will prevent accidents from this source, and by remembering the facts here given, and putting them to practical use, all such accidents may be avoided.

Management of China Ware.— The best material for cleansing either porcelain or glass ware, is fullers' earth; but it must be beaten into a fine powder, and carefully cleared from all rough or hard particles, which might endanger the polish of the brilliant surface. In cleaning porcelain it must also be observed that some species require more care and attention than others, as every person must have observed that china-ware in common use frequently loses some of its colors. The red, especially, of vermillion, is the first to go, because that color, together with some others, is laid on by the Chinese after burning.

It ought to be taken for granted that all china or glass-ware is well tempered; yet a little careful attention may not be misplaced, even on that point: for, though ornamental china or glass-ware are not exposed to the action of hot water in common domestic use, yet they may be injudiciously immersed in it for the purpose of cleaning; and, as articles intended solely for ornament may not be so highly annealed as others, without any fraudulent negligence on the part of the manufacturer, it will be proper never to apply water to them beyond a tepid temperature.

When china is first bought it should be *seasoned* otherwise it may crack when put in hot water. The best way to season it is to wrap each piece in some soft material or substance, so that the pieces will not come in violent contact with each other, and place them in a copper or tin vessel with cold water, over the fire. The water should then be gradually heated till it nearly reaches the boiling point. When taken out of water at any time, china should be wiped dry at once or it will look dim. Articles with gilding on them should not be allowed to remain in water any length of time. The gold will be injured by being soaked in water

To mend china or glass the fine cement (mentioned under the head of cements) composed of isinglass boiled down, and spirits of wine — two parts of the former to one of the latter — and applied warm, is especially valuable.

To Preserve Delicate Steel Articles from Rust.— Paint the articles over with white bees-wax dissolved in benzole. The benzole rapidly evaporates, leaving the steel covered with a thin coating of the wax, by which it is preserved from the action of the watery vapor in the atmosphere. As the solution is very volatile, it should be kept in a glass bottle, furnished with an accurately fitting stopper.

To Preserve Iron and Steel Goods from Rust. — Dissolve half an ounce of camphor in one pound of lard; take off the scum mix as much black lead as will give the mixture an iron color. Iron and steel goods rubbed over with this mixture, letting it remain on twenty-four hours, and then dried with a linen cloth, will keep clean for months. Valuable articles of cutlery should be wrapped in zinc foil or be kept in boxes lined with zinc. This is at once an easy and effective method.

Mending Broken Dishes. — Plates or dishes merely cracked in halves and not shattered, may be mended in this way: Get a little white paint, such as is used by house-painters, and lay it on the bottom of the dish with a small brush. Cut a piece of tape the length of the crack, lay it down and cover one side with paint, and then lay it over the crack. Press the tape down perfectly smooth. The dish should not be used for two or three weeks, after which it will be found to be perfectly cemented.

Injuries from Chemicals.— Accidents sometimes occur by which strong mineral acids—nitric, sulphuric, or hydrochloric — come in contact with the skin. If not at once washed off or neutralized with alkali—soda, potash, or lime—they will eat into the flesh, destroying the tissue, thus giving rise to intense pain. In like manner the caustic alkalies will destroy the surface of the body when in contact with it, and they require the application of some diluted acid of which vinegar is a convenient form.

Dyeing in Various Colors.— Many articles that have become soiled or faded may be rendered again serviceable by dyeing, and most of them may be dyed at home, if this is more convenient than to send such articles to a professional dyer. Home dyeing also saves money and often, also, vexatious delays.

The filaments of which various kinds of fabrics are made are derived either from the animal or the vegetable kingdom. Of the former there are three varieties, silk, wool and fur; there are three also in the vegetable kingdom, flax, hemp, and cotton. There are so many shades of color, that to attempt to name them would be futile as well as useless here; but the various shades produced by coloring matter may be classed in one or the other of the following groups: Simple—1, Blues; 2, Reds; 3, Yellows. Binary—4, Violets; 5, Orange colors; 6, Greens. Ternary—7, Compound colors; 8, Black.

Some colors adhere at once to the goods which are immersed with them and are called substantial colors, while others require that the material to be dyed should undergo some previous preparation in order to render them permanent. This is done by using what are called *mordants*. Mordants should possess four essential qualities: 1, They should have an equal affinity for the fiber of the material and coloring matter. 2, They should not injure or destroy either fabric or color by prolonged action. 3, They should form with the color a compound capable of resisting the action of air and water. 4, They should be capable of readily conforming to the various operations of the dyer.

The ordinary mordants are alum, oxide of tin, protoxide of lead, infusion of nutgalls, and some others.

Silk is most easily dyed and takes the finest colors; next to silk comes wool, while the woody fibers of cotton and linen are the most difficult to dye.

Science has added so many articles and their combinations to the art of dyeing that the domestic use of the dyes formerly used has greatly declined of late years, and the business is mostly done by professional dyers especially in all large places.

But the discovery of analine dyes, and the improvements in their manufacture by which a great variety of brilliant colors are obtained, has given a new impetus to domestic dyeing. Analine dyes of almost any color or shade may be obtained and the difficulty and dirtiness which formerly accompanied home-dyeing are done away with. So great is the affinity that these dyes have for cloth, the use of mordants may be dispensed with.

These dyes are obtained from analine, a substance found among others in the waste formed in the manufacture of coal gas, and the various colors are produced by different methods of chemical treatment. Among the colors produced are magenta, mauve, violet, puce, purple, canary, cerise, scarlet, orange, blue, pink, green, crimson, brown, black, lavender, slate and grey; and different shades of color may be formed by using a greater or lesser proportion of water.

The mode of using these dyes is, for coloring small articles such as ribbons, feathers, etc., as follows: Into an earthern basin pour two or four quarts of boiling water; put the articles to be dyed into this and let them soak a minute or two, then lift them out with a piece of clean stick and pour in a little of the dye. The quantity must depend upon the shade required. The articles must not be allowed to remain in the water while the fluid is poured in. The dye must mix with the water, and then the goods are put in and stirred briskly with a piece of stick that the color may be equally distributed. For most goods from five to fifteen minutes' immersion will be sufficient; if a deep shade is desired they may remain a little longer. The affinity of the dye for the fabric is so great that the quantity of water used is not material. Use enough water to give plenty of room for the goods to expand. When the goods are of a sufficiently deep shade remove them from the water with the stick and hang up to dry. They must be thoroughly dry to show the full beauty of the color. A little starch may be added to the dye if desirable. When silks or ribbons are to be dyed, before they are immersed they should be laid on a board and well brushed with soap and water to clean them and take out the creases.

India Rubber Varnish for Boots.— Dissolve half an ounce of asphaltum in one ounce of turpentine; also dissolve quarter of an ounce of caoutchouc in two ounces of mineral naphtha. The two solutions are to be mixed before application.

A superior blacking for boots and shoes is made as follows: Ivory black one and a half ounces, treacle one and a half ounces, sperm oil three drachms, strong oil of vitriol three drachms, common vinegar half a pint. Mix the ivory black, treacle and vinegar together, then mix the sperm oil and oil of vitriol separately and add them to the other mixture.

Iodine Ointment.— Take of iodine six grains; iodide of potassium forty grains; lard one ounce. Powder the iodide of potassium in a mortar, then place it on a slab or old dish with the iodine, and add spirits of wine to dissolve the iodine. Then rub them together and afterwards mix with the lard. This ointment is intended for scrofulous sores in large glands where the skin remains unbroken.

Poultices.— A good poultice is a local tepid bath, but while the substance of which it is made should be thoroughly saturated with water, it ought not to be too wet.

The bread and water poultice is one of the best in general use

It is so generally used that to describe it is not necessary. Evaporation is the object aimed at in applying a poultice, and on this account the patient should be kept in bed to prevent the possibility of a chill from drafts of cold air. A bread poultice is the vehicle for numerous decoctions of herbs, vegetables, etc. If laudanum is to be applied in this way it should be added just before the poultice is laid on.

Linseed poultices should be made of the powdered linseed. Linseed is an emolient and demulcent, softening dry and hard surfaces, and also sheathing raw and tender places in diseased parts, and by mixing with acrid and corrosive matters in the pores and passages of the body neutralizing their effects. To mix the poultice heat a basin in an oven, or put it near the fire where it will become hot; pour in hot water and add some linseed powder, stirring the latter with a stick until well mixed; add hot water and meal alternately, stirring all the while, until the mixture is nearly thick enough, and then beat it with a broad bladed knife till the poultice is firm and perfectly free from lumps. Have ready a piece of old linen folded double, large enough to cover the affected spot; spread the linseed about the fourth of an inch thick on the linen. Do not let it get cool, place a piece of lard about the size of a hazel-nut in the middle. When the lard melts spread the grease over the top of the poultice. It is then fit for application.

Bran poultices are an excellent remedy in cases of rheumatism and lumbago, as well as in cases of internal inflammation. Two flannel bags should be provided so that when one poultice is removed another may be put on at once. The bags should be large enough to cover the seat of pain. The best way to moisten the bran is to place the quantity required in a colander over which a piece of muslin has previously been spread. Pour boiling water over the bran, squeeze the superfluous water out with a wooden spoon and when sufficiently drained, turn the bran into a flannel bag. A piece of oiled silk or waterproof should be laid over the poultice.

Beef-Tea for the Sick.— Properly prepared, beef-tea is the highest form of nourishment that can be administered in critical stages of numerous diseases; but its good effects are liable to be lost by want of knowledge in the cooking. There are many ways of making beef-tea; the best and most simple, however, is the following:— Take half a pound of beef free from fat, bruise it with a steak-mallet or rolling-pin until the meat is thoroughly crushed; soak the meat in the proportion of half a pound of beef to half a pint of cold water. When the meat has been in the water about an hour, or less time, if necessary, throw it into a clean stew-pan, and let it just boil up. All the juices of the meat will thus be extracted, without any waste by evaporation. The beef-tea should then be strained from the meat and set aside, to let the fat settle on the top. A larger quantity of beef-tea may of course be made in the same manner. The meat should not be thrown away without being again stewed for a considerable time, in order to extract its utmost value. For this purpose the beef should be covered with water and placed in an earthenware jar, which should be set by the side of the fire in a saucepan containing water. An inverted saucer should be placed on the top of the jar to prevent the steam from getting in. After having simmered for several hours, the liquor should be strained, set aside, cleared ot fat, and afterwards used instead of plain water, to make any beef-tea required. The latter preparation is called beef-stock.

The ordinary mode of making beef-tea, by simply boiling a certain quantity of meat for an indefinite time in a saucepan, is the worst plan imaginable. The liquor thus prepared is not only unpalatable, but wanting in essential points of nourishment, all the volatile and valuable properties of the meat having been wasted by evaporation. As a rule, whenever a nurse smells the savory odor of her patient's meal whilst cooking, she may depend that there is a waste of nourishment, and she should endeavor to stop the waste, by withdrawing the joint a little distance from the fire, closing the sauce-pan lids, etc.

Vapor Bath.— A vapor bath may be made by putting boiling water into a large pan and placing a cane-bottom chair over it. The patient sits in the chair, enveloped in a blanket, the bath also being covered by it. Baths of other kinds, as sulphur, herbal, spirit vapor, etc., may be taken in the same manner, but these should not be taken except under medical advice.

Liniment for Sprains and Bruises.— A solution of ammonia and soap liniment is an excellent remedy for sprains and bruises. The proportion of the mixture is two drachms of the solution of ammonia to one ounce of soap liniment.

A good remedy for sprains, bruises, etc., is made in this way: — Put the white of an egg into a saucer and stir it with a piece of alum about the size of a walnut until it becomes a thick jelly; apply a portion of it on a piece of lint or tow large enough to cover the sprain, changing it for a fresh one as often as it feels warm and dry; the limb is to be kept in a horizontal position by placing it on a chair.

Stings of Wasps, Bees and Nettles.— When a person is stung by a bee, the sting should be pulled out at once. A wasp does not leave its sting in the flesh. Common table salt, moistened with a little water, is a good remedy for the sting of wasps or bees. A case is recorded where a person was stung in the windpipe by a wasp incautiously taken into the mouth in a glass of beer. The alarming symptoms that followed were almost instantly relieved by swallowing repeated doses of water saturated with salt. It is also a fact worth knowing, at the season of the year when wasps are troublesome, that when persons are stung by them, a drop or two of potash water will afford instantaneous relief, as it neutralizes the poison from the sting at once. Sweet oil is also recommended for the sting of bees and wasps if the application be made at once.

The swellings occasioned by nettle stings may be removed by rubbing the part with a sprig of rosemary, thyme, mint, dock or other aromatic plant. The juice of these plants is the antidote for nettle stings.

To Destroy Crickets and Beetles.— Put some strong snuff in the holes and cracks whence they come. Cucumber parings when strewn near their holes will drive them away.

To Destroy Bugs and Fleas.— Get an ounce of quicksilver, and the whites of two eggs, beat it to a froth; or if it is desired to be thicker, the white of one egg will be sufficient. Take the bedstead to pieces and apply the mixture to the crevices, joints and screw holes. See that it is thoroughly absorbed.

A bug poison is made by mixing one pint of proof spirit, two ounces camphor, four ounces oil of turpentine, and one ounce of corrosive sublimate.

An effectual lime for the destruction of bugs is made in this wise: — Two ounces of red arsenic, a quarter of a pound of white soap, half an ounce of camphor dissolved in a teaspoonful of rectified spirits, made into a paste of the consistency of cream. Place this mixture in the openings and cracks of the bedstead.

Protection against Moths.— When furs and woolens are put away they should be well shaken, and in the drawer with them should be placed pieces of camphor, cedar shavings, cuttings of Russian leather, or pine cones which contain a certain amount of turpentine. Any of these things will generally prevent the appearance of fur moths.

But a safer way to preserve furs from the vermin which prey upon them is to beat them thoroughly with a stick, then brush them, sew them up in calico and then wrap them securely in brown paper. They had better be kept in a box into which moths cannot enter. During the summer furs should be examined once a month and if any dampness is apparent they should be beaten and well aired.

Powdered alum dusted well into furs is highly recommended as a protection against moths.

Woolen goods are generally protected from moths by placing in proximity with them spices — pepper, camphor, turpentine, paraffine, etc. But while strong odors of all kinds are disliked by the moths such protection is not always effectual. Alum is a sure preventive of the depredations of these insects. Articles that admit of saturation in a solution of alum may be thus treated, and finely powdered alum used for such articles as would suffer from immersion in the solution. Red-dyed flannels are not attacked by moths, probably from the fact that alum is generally used as a mordant in coloring them. Gray flannels and gray woolen goods of all kinds are particularly enticing to moths and need especial attention to preserve. White woolens and blankets may be safely left in exposed places if, after being washed they are dipped in a solution of alum.

To Destroy Flies.— Strong green tea, sweetened well, and set in saucers about places where they are most numerous will attract and destroy them.

Fly papers may be made by spreading thick molasses over brown paper; the flies alight on the paper and cannot get away.

A good fly poison is made by boiling quassia chips in water into a very strong decoction, and then sweetening the liquid with treacle or sugar. It is poison to flies, but is not injurious to human beings.

Impromptu Mousetrap.— There are various traps, ingeniously contrived, by which mice are captured. If one of these is not at hand, one that will be equally efficacious may be made by using a basin and a plate just large enough to fit within the rim of the basin. There are two ways of setting — one by screwing the bait upon the point of a small gimlet and allowing the rim of the basin to rest upon its handle, and the other by wedging the bait tightly into the bowl of a tobacco pipe or a thimble and placing it as indicated when using the gimlet.

Phosphorus paste is used to destroy mice. It produces intense thirst, and it is advisable to leave water near it, but away from the holes, as the mice are likely to die while drinking or before they can reach their retreats. Phosphorus paste is equally effectual to destroy rats. To make it, melt one pound of lard with a very gentle heat in a bottle or glass flask plunged in warm water; add half an ounce of phosphorus and one pint of proof spirit; cork the bottle securely and shake it frequently while it cools, so as to mix the phosphorus uniformly. When it is cold pour off the spirit and thicken the mixture with flour. Small portions of this mixture may be placed where the rats are in the habit of frequenting. It is luminous in the dark, the rats are attracted by it and eat it greedily. It is certainly fatal.

To Foretell the Weather.—The appearance of the sky at sunset often portends the state of the weather on the following day. If it has a rosy appearance it indicates fine weather; but if there should be a halo round the moon, the weather will probably be wet. If the sky is red in the morning it portends wet weather. Inky clouds floating in the sky also indicate rain. If clouds form high in the air in thin white trains like locks of wool, they portend wind and probably rain. When general cloudiness covers the sky, and small fragments of clouds fly underneath, they are a sure sign of rain and probably it will be lasting. When the barometer rises and the thermometer falls the weather will be dry; but if the barometer falls and the thermometer rises rain may be looked for.

How to Make a Weather-house.—For the framework of a weather-house an old cigar-box is well suited. A piece of catgut such as that used for the third string of a violin will be required, and this should be nearly as long as the cigar-box is high. Through the center of the *end* of the box a hole must be bored with a bradawl, and into this one end of the catgut should be tightly wedged with a wooden peg. This, when the box is placed in its proper position will form the top of the weather-house, and the catgut will hang down. Through the lower end of the gut, about three-quarters of an inch from the bottom of the box, thrust a piece of wire, say three inches long and as thick as a large needle; this should in ordinary hang parallel to the front of the box, but the ends should be bent so as to project forwards. On the ends the figures to indicate wet or dry should be placed, and small Dutch dolls of an inch in length may be used, and dressed in character — the male one at that end of the wire which will be thrust forward when the gut untwists through damp weather, and the female at that which will come forward, when owing to dryness, the gut again contracts. A *loop* of wire may be fixed from the back, just above the cross wire, for the gut to play through and to keep it steady, and nothing more will be needed except the ornamental front. For this no design is better than the ordinary one, which is an old or rustic building, with two doorways for the figures. Take a piece of cardboard and cut out the doorways and windows, and the latter may be glazed by fixing a piece of glass at the back; narrow strips of white paper gummed across these will form mullions; and the appearance of octagonal panes is given by gumming a piece of cap-net over the glass. The rough-cast appearance upon the front is usually obtained by spreading a coat of glue over the cardboard, and then sprinkling on coarse sand, broken shells, etc.; but this may be better and more artistically done by gumming over the front a sheet of the coarsest glass-paper, and painting upon this with oil-colors to imitate stone-work. The front must be large enough to conceal the box, and must be fixed upon it with glue. Glass-paper of various degrees of fineness, used as above, will also be found applicable to making models of small buildings, or ruins in cardboard, for chimney or other ornaments; and where the finer kinds of glass or sand paper are used, water-colors are better than oil for tinting them.

To Render Leather Boots Waterproof.— Melt over a slow fire, one quart of boiled linseed oil; one pound of mutton suet; three-quarters of a pound of yellow beeswax; and half a pound of common resin; or smaller quantities in these proportions. With this mixture saturate the leather of new boots and shoes, having previously made them rather warm.

Rules for Marketing.— A few rules for marketing, particularly for those who live in cities and towns, may be useful to many persons. It is a good plan to determine before going to market what shall be purchased and in what quantity. This is especially desirable when the butcher is to be visited, Of course this rule is not inflexible; there may be some variation from it, determined by circumstances, but it is generally advisable to determine in advance upon such articles as you will buy. Another rule to adopt is to deal at shops where good articles only are sold, and to pay for them when purchased if it is possible to do so. Choose for yourself the articles you wish, for otherwise inferior articles may be sent to you. Examine carefully the quality of what you buy. Always buy good, rather than inferior articles.

Summer and Other Drinks.— Good fresh water is the *best* of all beverages, but it is not always to be had. In another part of THE HOME GUIDE will be found an article upon this subject which should be carefully read.

There are beverages for Summer drink that are cooling, pleasant and beneficial. Fruit essences added to water in the proportion of a tablespoonful to a tumbler of water make pleasant beverages.

Artificial chalybeate water, for persons whose constitutions need iron may be supplied at home by taking small scraps of iron or nails and putting them into a stone or earthen pot holding two or three quarts of water. Wash the iron free from all dirt, and if it is exposed to the air in a dewy night in some place where it will take a little rust without being defiled by blacks, the chalybeate water will be ready all the sooner. Fill the vessel with rain or river water containing the greatest quantity of air. Water can be aerated by pouring it repeatedly from one vessel to another. After standing from twenty-four to thirty-six hours the water will have extracted from the iron by oxydization a supply of chalybeate elements, and be fit for use. When consumed, add more aerated water and let it stand as before.

Ginger beer is a palatable and popular summer drink. A good way to make it is as follows: — Slice four lemons and crush four ounces of ginger; add to them one pound and a half of lump sugar and two ounces of cream of tartar, or the same amount of lemon juice. Pour on this mixture two gallons of boiling water and when it has cooled add a little good yeast. Bottle it next morning, tie down the corks and in two days it will be fit for use.

A very pleasant drink in warm weather is apple water. To make it cut two large apples into slices and steep them in about a quart of boiling water. When cool, sweeten it to taste and it is ready for use.

There are several ways of making lemonade but they are so generally known that it is needless to describe them.

Orangeade is made by squeezing out the juice of the oranges, putting the peel into boiling water and covering up closely, next putting sugar into water and boiling to a thin syrup; then skimming the latter and when cold mixing the juice syrup and the liquid from the peel. Add water and strain through a jelly bag. Drink when cold.

A pleasant and strengthening drink is made by boiling very gently in a saucepan the following ingredients: The rind of a lemon, a small piece of cinnamon, and a teaspoonful of pearl barley in a pint of cold water. When the barley is tender strain through a fine seive and sweeten with a spoonful of treacle, honey or sugar, according to taste.

Temperance.— The word is not used here in the restricted sense of applying it simply to the use of alcoholic drinks. We refer to a regular mode of living, guarding against abuses and excesses in all things. The benefit of temperance, in this comprehensive sense, has been recognized in all ages, at least since man emerged from the condition of a savage nomad. Plutarch's rules in regard to a regular mode of living are excellent. By their observance he lived to an advanced age; and Galen, who lived to the extraordinary old age of one hundred and forty years without having experienced disease, is a striking proof of a temperate life. His advice as found in his Treatise on Health is as follows: "I beseech all persons who shall read this work, not to degrade themselves to a level with the brutes, or the rabble, by gratifying their sloth, or by eating and drinking promiscuously whatever pleases their palates, or by indulging their appetites of every kind. But whether they understand physic or not let them consult their reason and observe what agrees and what does not agree with them, and forbear everything which by their own experience they find to do them hurt; and let them be assured that by a diligent observation and practice of this rule, they may enjoy a good share of health, and seldom stand in need of physic or physicians."

Galen wrote this advice nearly eighteen centuries ago, and it is as true and applicable now as then. "Be temperate in all things," said the great apostle. By following that precept mankind will be healthier, happier and wiser.

Tattling.— A tattler — one who seems to take delight in making trouble by telling what this one and that says about others — is generally heartily despised, and deserves to be It is a most pernicious habit and should be guarded against under all circumstances. The amount of mischief and unhappiness and wrong which tattlers occasion in the world is very great. Always think twice before you speak and don't speak then if it is upon your tongue to do some one an injustice by telling what you had better keep to yourself.

Swearing.— A direct, manly and correct use of our native language is what all should seek to attain. Swearing does not give emphasis to speech when you converse with well-informed and sensible persons. In the best circles profanity is proscribed as low and vulgar, and its use in the presence of the first and best men is always to the prejudice of the profane.

Instructions to Swimmers.—Every person male and female should acquire the power of swimming. The fact that the exercise is a healthful accompaniment of bathing, and that lives may be saved by it, even when least expected, is a sufficient argument for the recommendation. The art of swimming is in fact, very easy, and those persons who take the few brief hints we are about to offer, will soon find themselves rewarded by complete success. The first consideration is not to attempt to learn to swim too soon. That is to say, you must not expect to succeed in your efforts to swim, until you have become accustomed to the water, and have overcome your repugnance to the coldness and novelty of bathing. Every attempt will fail until you have acquired a certain confidence in the water and then the difficulty will soon vanish. When this confidence has been gained, the following hints by the celebrated Dr. Franklin will be found all that can be required: "The only obstacle to improvement in this necessary and life-preserving art, is fear; and it is only by overcoming this timidity that you can expect to become a master of the following acquirements. It is very common for novices in the art of swimming to make use of corks or bladders to assist in keeping the body above water; some have utterly condemned the use of them; however, they may be of service for supporting the body, while one is learning what is called the stroke, or that manner of drawing in and striking out the hands and feet, that is necessary to produce progressive motion. But you will be no swimmer till you can place confidence in the power of the water to support you; I would, therefore, advise the acquiring that confidence in the first place; especially as I have known several, who, by a little practice necessary for that purpose, have insensibly acquired the stroke, taught as it were by nature. The practice I mean is this: choosing a place where the water deepens gradually, walk cooly into it till it is up to your breast; then turn round your face to the shore, and throw an egg into the water between you and the shore; it will sink to the bottom, and be easily seen there if the water is clean. It must lie in the water so deep that you cannot reach to take it up but by diving for it. To encourage yourself, in order to do this, reflect that your progress will be from deep to shallow water, and that at any time you may by bringing your legs under you and standing on the bottom, raise your head far above the water; then plunge under it with your eyes open, which must be kept open before going under, as you cannot open the eyelids for the weight of water above you; throwing yourself toward the egg, and endeavoring, by the action of your hands and feet against the water, to get forward until within reach of it. In this attempt you will find that the water buoys you up against your inclination; that it is not so easy to sink as you imagine, and that you cannot, but by active force, get down to the egg. Thus you feel the power of water to support you, and learn to confide in that power while your endeavors to overcome it and reach the egg, teach you the manner of acting on the water with your feet and hands, which action is afterwards used in swimming to support your head higher above the water, or to go forward through it. * *

"In fresh water, if a man throw himself on his back, near the surface, he cannot long continue in that situation but by proper action of his hands on the water; if he use no such action, the legs and lower part of the body will gradually sink till he come into an upright position, in which he will continue suspended, the hollow of his breast keeping the head uppermost

"But if, in this erect position, the head be kept upright above the shoulders, as when we stand on the ground, the immersion will, by the weight of that part of the head that is out of the water, reach above the mouth and nostrils, perhaps a little above the eyes, so that a man cannot long remain suspended in water, with his head in that position.

"The body continuing suspended as before, and upright, if the head be leaned quite back, so that the face look upward, all the back part of the head being under the water, and its weight consequently, in a great measure supported by it, the face will remain above the water quite free for breathing, will rise an inch higher every inspiration, and sink as much every expiration, but never so low as that the water may come over the mouth.

"If, therefore, a person unacquainted with swimming, and falling accidentally into the water could have presence of mind sufficient to avoid struggling and plunging, and to let the body take this natural position, he might continue long safe from drowning, till, perhaps, help should come; for, as to the clothes, their additional weight when immersed is very inconsiderable, the water supporting it; though when he comes out of the water, he will find them very heavy indeed. * * *

"I know by experience, that it is a great comfort to a swimmer, who has a considerable distance to go, to turn himself sometimes on his back, and to vary in other respects the means of procuring a progressive motion.

"When he is seized with the cramp in the leg, the method of driving it away is, to give the parts affected a sudden, vigorous and violent shock which he may do in the air as he swims on his back.

During the great heats in summer there is no danger in bathing, however warm we may be, in rivers which have been thoroughly warmed by the sun. But to throw one's self into cold spring water, when the body has been heated by exercise in the sun, is an imprudence which may prove fatal. I once knew an instance of four young men, who having worked at harvest in the heat of the day, with a view of refreshing themselves, plunged into a spring of cold water; two died upon the spot, a third next morning, and the fourth recovered with great difficulty. A copious draught of cold water, in similar circumstances, is frequently attended with the same effect in North America."

To distinguish Tapestry Carpet from Brussels.— Tapestry carpeting is distinguished from Brussels by each color of the latter being woven in separately the wool never being cut, but carried over or underneath another color; while tapestry is woven entirely of one tint, and then the brightest and most seductive colors are printed upon it. Of course this cannot wear like Brussels, but neither can the gradation of shade of color or luxuriance of tint be found in the latter as in tapestry; so a purchaser has to choose between strength and beauty. Brussels is the most economical of the two.

TO CLEAN AND RENOVATE CLOTHING.

To Revive Black Silk.— There are several ways of reviving black silk. The following is a simple method. Remove all the grease spots (see next paragraph,) then spread the silk on a clean ironing board. Have ready a mixture of beer and water and ammonia in the proportion of a pint of cold water to a teacupful of stout or porter, in which has been dissolved a lump of salts of ammonia as large as a hazel nut. Take a clean sponge dip it in the mixture and squeeze it nearly dry, and apply evenly to each fold. As each fold is finished wind it upon a roller. Do not wrinkle it while rolling. When the silk is nearly dry take it from the roller shake it out and roll it again, repeating this operation till the silk is quite dry. Use no iron on any account, and the silk will come out almost as bright as new.

To Remove Grease Spots from Silk.— Get several sheets of blotting paper and lay a sheet over the grease spot; pass a moderately heated iron over the paper, replacing it as soon as soiled. If any coloring has been in the grease with which the silk has been stained, a little benzole, as used by artists, may be applied to the spot after the grease is removed. Before making any experiments on valuable silks it is well to try the means proposed on a piece of the same material having made a stain upon it similar to that you wish to remove from the silk.

Another method of cleaning and reviving black silk is in this wise. Take the dress entirely to pieces and shake each piece well; then spread on a deal table a newspaper or sheet of clean paper, and lay on a breadth of the silk. With a soft fine brush—a hat brush is suitable for the purpose --- go over it brushing it well. Shake it again and fold together in half, and place it on one side of the table. In the same manner shake, brush and fold each piece of the silk. Remove the paper and supply its place with a clean piece. Place a breadth of the silk again on the paper, and into a clean basin pour a half-pint of cold water, add a half-pint of good sweetened gin (the sugar stiffens the silk). These are the proportions for any quantity required. Have a piece of black crape or black merino, about half a yard square: dip it into the liquid and thoroughly wash over the *best* side of the silk. Be careful that it is well cleaned, and, if possible, wash it from edge to edge and wet it all over. Then fold over the silk in half, and fold again till the folds are the width of those of new silk. Place it in a clean towel, and clean each piece of the silk in the same manner, laying one piece on the other, and remembering by a mark which is the last piece done, as that must be the last piece ironed. Let the silk lie in the towel folded until a large iron is well heated: but don't let the iron be too hot; try it first on paper or on a piece of old dampened silk. Use two irons. When the iron is ready, place the piece of silk that was cleaned first on an old tablecloth or sheet folded thick; iron the wrong side quickly from edge to edge until dry. Fold the silk over lightly to the width of new silk, and place it on one end of the table until it is done. This simple process makes old silk look new.

To Take Spots of Pitch, Tar, or Turpentine from Linen or Silk.—Scrape off as much as you possibly can; afterwards moisten the places with salad oil, and let it remain for a day. If cotton goods, they should then be thoroughly washed in strong soap suds; or, if silk or woolen, apply some ether or spirits of wine to remove the grease.

To Clean Black Merino, Woolen Stuff, or Black Cloth Clothes.—Get five cents worth of carbonate of ammonia, put it into a clean basin and pour on it a pint of boiling water; cover it with a clean plate and set it by to cool. Take the article to be cleaned entirely apart and shake the pieces well. Take one piece at a time, and having covered a deal table with a clean newspaper, lay the cloth on and brush it well on both sides with a fine, hard brush, then shake again, fold up in half and lay on the end of the table. Proceed in a similar manner with each piece until all are brushed; then remove the paper and replace it with a fresh one, upon which place another thin piece. Lay upon the paper one breadth of the stuff, smooth and flat, the wrong side next to the paper; now take a piece of black merino about half a yard square, dip it in the carbonate of ammonia and water, (cold) wet it well and wash over the stuff or cloth. If it be cloth take care to wash it the right way so as to keep it smooth; when well washed over, fold the material in half, and place it in a clean towel laying one piece over the other until all are done. Mark the last piece, and keep them in the order in which they were laid so that they may be ironed in the same order. Let the merino or cloth rest in the towel for about half an hour; then iron the wrong side, after placing it on a thickly folded blanket or sheet. Place a thin sheet of paper or old glazed lining out of the dress, or a piece of linen, over the blanket or sheet. Have two heavy irons, using one while heating the other. Iron each piece, observing the order in which the stuff or cloth was cleaned, ironing first the piece that was cleaned first. Iron the pieces on the wrong side until quite dry; fold over the pieces with the width of new merino. Gentlemens' clothes may be cleaned in this way without taking them to pieces.

To Clean Ermine.--Ermine and minever are best cleaned with soft flannel. Rub the fur well against the grain, then dip the flannel into common flour, and rub the fur until clean; shake the fur and again rub it with a fresh piece of soft, clean, new flannel till the flour is out. By this process, the color of the ermine is preserved, and the lining need not be removed.

Another method for cleaning ermine and light-colored furs is to place the fur flat on a table and and rub it with bran, moistened with warm water; it must be rubbed until the bran is quite dry and then with dry bran. Use clean, soft, new flannel for rubbing with the moist bran, and muslin for rubbing on the dry. White and light-colored furs should afterwards be rubbed with magnesia on book muslin.

To Clean Swans' Down Cape or Tippet.--Make a lather of the best yellow soap and lukewarm water. Hot water causes the skin to shrink. Work the swans' down about in the water, but do not rub it; pass it again through lukewarm suds repeating this till you see the article is quite clear. After which rinse it through lukewarm water and then through cold water and squeeze it carefully. Shake it well and dry in the sun, holding and shaking it to prevent its drying in tufts or looking matted together.

To Clean and Renovate Velvet.---Make a mixture of equal parts of water and spirits of hartshorn. Take a stiff brush, dip it in the fluid and rub the velvet very carefully. When the stains have disappeared the pile of the velvet may be raised in this way: Cover a hot smoothing iron with a wet cloth, and hold the velvet spread over it. The vapor will raise the pile of the velvet with an occasional whisk from a brush.

Washing and Washing Fluids.-- With the use of approved washing fluids and good washing machines this important item in domestic economy is rendered comparatively easy. There are various preparations for sale under the name of washing fluids some of which are very good, but there are others which are very injurious to clothes.

Let us begin with flannels. And here is a method which has long been practiced and never discarded by those who have once adopted it. If flannels are but slightly soiled one lather of soap is sufficient to cleanse them; if much soiled there should be two — a wash and a rinse, and the rinse should be blued; but if only one lather is required blue that. Do not put two articles in the lather at one time; complete each article and hang it on a line immediately. Colored articles should not be put in a blued lather, nor articles of different colors in the same lather. Colored articles may be washed after white ones in unblued lathers. To make the lather, cut a half pound of the best yellow soap into three equal parts: cut one of the pieces in half; take one of these and shave it thin, put it into a quart sauce-pan, fill it with warm water and set it to melt. When melted pour half into a small tub and reserve the other half warm. Add two quarts of water to the bath, and when cool enough to bear the hand blue one excessively, for white flannels must be well blued to prevent them from turning yellow. Mix the blue well. This quantity of lather is sufficient to cleanse half a dozen ordinary pieces of flannel. Put in the flannel, one piece at a time, knead it well, squeezing it in and out, and in five minutes it will be clean. Squeeze it out lightly and draw it through the hand; do not squeeze it tightly, or wring it, as this will mark and spoil the flannel. If it is covered with suds and looks as though dyed blue it makes no difference. Shake it out and stretch it evenly with the hands to remove creases, and hang it up to dry. The quantity of the lather specified for the number of pieces indicated, is given to show the proportion of the liquid to the number of articles. When the white flannels are washed if there is lather left use it for handkerchiefs, towels or cuffs. After these are cleansed they may be put in a saucepan with the blue lather and a little soda and left to boil. Next wash the colored flannels; use no bluing. Stockings need well rubbing at the toes and heels to remove the dirt and perspiration.

To Clean Woolen and Fancy Fabrics.— The art of cleaning ladies' dresses and other articles of wearing apparel is very simple. When sent to a professional cleaner of these articles it is quite expensive and sometimes it will hardly pay. Those who desire to make the most of everything may clean their wearing apparel at home at very small cost.

There is one way to clean all woolen and fancy fabrics that comprise mixtures of wool and silk, or wool and cotton. In the first place the dress should be entirely ripped apart and every breadth separated. First, it makes up again in a very superior manner, looking fresh and new. Secondly, a whole skirt is heavy to manage; but single breadths any lady unaccustomed to washing can easily manage. Thirdly, delicate colors, or colors mixed with white, are apt to run if too long in the process, or if mixed together.

Fabrics given to fray much, and the bodies of which may therefore become too small to re-make if unpicked, must have the sleeves taken out and the tops and armholes over-cast, all trimming, bones, and hooks and eyes removed. When dry enough for mangling, open the shoulder-seams of the body first, to lay it flat for pressure. French merino, llama, serge, linsey, mohair, alpaca, plaid dresses, poplins, &c., come under the heading of woolen and fancy fabrics. Take a quantity of soap, and shave it up, and place it in a saucepan, which must be filled with water. Set it on the fire till completely melted. It is impossible to tell the quantity of soap required for a dress or cloak, or jacket. It depends on three things, the size of the garment, the thickness of the material, and how dirty it may be. Melt half a pound of soap in eight quarts of water — that is, two gallons. Pour two quarts into a separate tub, and add four quarts of water. Beat it up into a lather, and set it close to the fire to keep warm. This is the rinse. Pour the rest of the melted soap into another tub for the wash. If possible, keep them both about the same heat. They should not be used hot or cold, but about as warm as a lady's hand can conveniently bear. The quicker the articles are cleaned the better. Take the body first, if whole, or the pieces of it if separate. Do not attempt to clean two pieces at once. Put the first into the wash, squeeze it in and out, and knead a little. It generally will come clean almost instantaneously. When you see it is clean, squeeze it slightly out of the wash, and rinse it in the rinsing-suds. Squeeze it out again, but only very slightly, and be sure not to wring it. Hang it up dripping wet on a line in or out of doors. After the body, clean the sleeves separately, then each breadth separately, taking the dirtiest first. After a time the soap becomes exhausted. You may know when it is exhausted by one or two symptoms, or by both. If it no longer continues to cleanse the articles put in it, it has become too dirty for use; if from being thick and creamy at first, it becomes quite watery, you have absorbed all the soap out of the water in the articles cleaned. In either case, more soap must be melted. It does not take long to do this, and the temporary suspension of labor is not serious. After a little experience, the operator will be able to judge about the quantity needed for any job. If the soap in the wash coagulates too much while in use, a little warm water must be added and well mixed by hand, but it should not be rendered too thin. Soap is by no means to be rubbed on any article. When the rinse becomes dirty, a fresh rinse is needed. But on no account must plain water be used for a rinse, only suds. Many prefer a rinse stronger than the quantities above mentioned, namely, as much of the melted soap to only its own quantity of water—two quarts.

Also, on no account must the articles to be cleaned be wrung or much squeezed. One of the arguments against cleaning or washing fancy materials is that they look puckered afterwards, and are sometimes shrunk. The puckering is caused by wringing or squeezing; the shrinking by rinsing in water. Cashmere and woolen goods also shrink and wrinkle if so treated, and the wrinkles cannot be removed by mangling.

When very nearly dry, fold the peices together, lay them between clean cloths (white) — white linen will do — and send them to the mangle, with a request that they may lie in all night. Articles of different colors must not be folded together. White and colored or parti-colored materials must not be too damp when mangled, lest they run; still, if over-dry they wil not press smooth. Where a mangle is not available, put the articles to be pressed between the two mattresses of a bed, and sleep on them. The slight dampness in them cannot come through the thickness of a mattress or feather-bed. After the pieces have been mangled, spread a fine, clean sheet or cloth on a blanket on a table, and iron each piece with a rather hot iron; iron cashmere and fancy fabrics on the wrong side, alpacas on the right. Be sure the iron is clean. Hang the pieces on a couple of towel-horses at the fire to dry them.

To Clean Delicate-Colored Fabrics.— If the fabrics to be cleaned are of very delicate colors, or chintz colors, or in fact are such as are likely to run, use curd soap to clean them. Have a clean sheet or two ready, and as each piece is rinsed in the suds, lay it in the sheet, and fold it up. When the first sheet is full, roll it from the last-used end, take out the first piece of the cleaned articles, and hang it up on a line by pegs or pins, or near a brisk fire. Take each out as you think it has had time to dry a little, and treat it the same.

When skirts are washed whole, they must be dried by being pinned by the hem between two lines, triangular-wise on two clothes-lines across a garden or room.

Any good yellow soap may be used for stout or strong fabrics, but money is not saved by using inferior soap. All soap contains water; the best has the least in it. The inferior soaps have more or less, according to their value, so that really by purchasing the best soap you have more soap when dissolved for your money than if using a cheaper kind, much of which turns to water. The saving is considerable. In cleaning, never use soda.

To Clean White Cashmere, White Llama, or White Alpaca.—Prepare a wash and a rinse as already described. If the articles are much soiled, prepare two rinses. Blue the rinses as usual. Clean the white articles piece by piece, as already described, and rinse in the blue water. As they are not squeezed out except very slightly, the quantity of soap retained in the articles out of the rinse will cause them to look much too blue. This need cause no alarm. Hang them at once on a line, if possible out of doors; it makes the white a better color. The soap and blue will evaporate during the process of drying. We recommend the use of curd soap.

Washing White Clothes.— First, select from the clothes to be washed, all the coarse and dirtiest pieces from the fine; then put them in separate tubs of soft water to soak over night (the night previous to washing). Then prepare, in a separate vessel, the liquid for a large washing, namely, half a pound of good brown soap, cut in small peices, half a pound of soda, and three ounces of fresh, unslacked lime, mixed in one gallon of boiling, soft water. Stir well up, so as to mix the ingredients, and let it stand until morning. Then strain off the liquid, being careful to leave all sediments behind. Having ready ten gallons or so, of boiling soft water in your boiler pour in the prepared liquid (keeping out all settlings that may yet be remaining) then throw in your clothes and boil them twenty minutes, or half an hour. Previous to which, put an earthern plate at the bottom of the boiler, to prevent the clothes from burning. After boiling the appointed time, take them out; scald them, blue them, and rinse them in clean, soft water, warm or, cold, and your clothes will be as clean and white as snow.

By this method, the finest linens, laces, cambrics, etc., can be readily and easily cleansed, with very little trouble. No rubbing the skin off your hands, and tearing the clothes to peices; and the washing for a family of twenty persons completed before breakfast, have the clothes out to dry, the house in good order, all comfortable again for the day, and the family saved from washing-day annoyances. Who would not wish to have such comforts?

Should there be only a small washing, and less than ten gallons of water required to boil them in, less of the liquid of lime, soap and soda, can be used in proportion. When there is any difficulty in procuring fresh lime, a quantity of the liquor may be made at once from the lime, which will keep for years, corked in bottles, and ready for use.

Washing Colored Clothes.—After the white clothes are washed, wash the colored through two waters, and rinse in clear cold water. Colored muslins should be left in the water until the moment of hanging out to prevent the colors from running. A handful of salt in the rinsing water will often prevent colors from running. Colored clothes, unless very dirty or of inferior quality, should not be boiled. It is a good plan to take both colored cotton things and colored woolens from the line when half dry, and shake them out, then rehang them to finish drying.

To Bleach Wool.—To one pound of woolen yarn take two pounds of powdered white chalk, and mix with cold water to a paste. Knead the yarn about in this for a short time, after which rinse in cold water, and dry, and the wool will appear thoroughly cleansed and bleached.

Flannels are frequently ruined by want of care in washing. Putting them into lather too hot or too cold, or rinsing in plain water, or letting them lie in the tub will shrink flannels. Rubbing soap on flannel, shrinks, mats, and felts it; and it is discolored by washing at the same time in the same preparation with much soiled articles.

To Bleach Lingerie Lace and Embroidery. — After washing and boiling let it lay all day in excessively strong blue water. Lay it all night on the grass to dry. Boil again with soap without soda or blue. Rinse well. It must be remembered that too much soda turns linen, etc., yellow.

To Renovate Crape.—Brush the crape well with a soft brush and over a wide mouthed jug or a jar of boiling water, hold the crape tightly, and gradually stretch it. The crape will become firm and fit for use, every mash and fold being removed if it is properly manipulated over the boiling water. White or colored crape may be washed and pinned over a towel on the outside of a bed until dry. Crape that has been exposed to rain or damp—veils especially—may be saved from spolling by being stretched tightly on the outside of the bed with pins, until dry; and no crape that has been wet should be left to dry, without having been pulled into proper form. If black crape, lace or net is faded or turned brown, it may be dipped into water colored with the blue-bag, adding a lump of loaf sugar to stiffen, and then pinned on to a newspaper on a bed.

To remove white stains from crape, produced by water or rain drops, spread the crape on a table, and fix it firmly down by weights, placing beneath it a piece of black silk. Over the white stains apply with a camels' hair brush common black ink, and with a piece of soft black silk, take off any ink that may rest upon it.

To Remove Iron Mould.—Wet the spots in milk and cover them with common salt. This should be done before the article has been washed.

About Laces.—Laces that have become soiled can, with a little care be rendered equal to new. Make a strong solution of soap (as described to clean woolen or fancy fabrics). The laces may all be put in at once. Squeeze them in and out. Generally one squeezing through will free them from dirt. They may then be thoroughly rinsed, blued and starched; but if at all discolored and bad looking they must first be boiled. Soap each article thoroughly all over. Fill a basin or jar with water as blue as possible and add lumps of soda and soap. Put the laces in a small earthen jar, or pipkin, and set this into another vessel, with sufficient water to nearly fill it, with the jar partially immersed; but do not let the water get into the solution; cover the laces and let them boil two or three hours, taking care that the water in the outer vessel does not boil out, if necessary the water must be replenished. When the lace has boiled long enough, turn it out in a basin, rinse well, blue it with the best blue that can be had, but not much. Then get a bottle of the best drawing gum, such as is used by artists, (a poor article will not do), and put a teaspoonful into a pint of water; stir it well, and stiffen the laces in it; squeeze them dry: lay them out on a clean, dry towel, and then fold them up until a portion of the water is absorbed. Cover a pillow or cushion with clean cloth, and over it pin out each piece of lace by every point, stretching it equal to new, but not straining any part. The right side of the lace should be up. Leave it until entirely dry, this may not be until next day. If it is Cluny lace with raised spots, take a pin and carefully raise all the spots as it lays on the cushion. Remove the pins and pick out every part and corner of the lace with the fingers. If raised, raise it by drawing it over the thumb nail. Brussels lace and Honiton lace look better ironed while still a little damp, instead of being pinned out as described. Arrange these also with the finger both before and after iorning.

To Clean White Veils. — Put the veil in a solution of white soap and let it simmer a quarter of an hour; squeeze it in some warm water and soap until clean. Rinse it from soap and then in clean cold water, in which is a drop of liquid blue; then pour boiling water on a teaspoonful of starch, run the veil through this and clean it by clapping it. Afterwards pin it out smooth, keeping the edges straight and even.

To Whiten Discolored Linen.— Put a gallon of water into a saucepan with one pound of finely cut up soap; and, when thoroughly melted, put the linen into it, and boil about thirty-five minutes; then take it out and rinse in two cold waters with a very little blue in it.

Cleaning Kid Gloves.—The easiest and best method to clean a glove is to stretch it on the hand or on a stick and then carefully rub it with a piece of moist flannel on which a little powdered soap has been applied. When the dirt has been cleaned off the glove, the moisture is to be removed with a piece of dry flannel.

A method practiced by the French is to put the gloves on the hands and wash them in some spirits of turpentine until quite clean; then hang them up in a warm place, or where there is a current of air, and all smell of the turpentine will be removed.

Another method is this: Have ready a little new milk in one saucer and a piece of brown soap in another, and a clean towel folded three or four times. On the cloth spread out the glove smooth and neat. Take a piece of flannel, dip it in the milk, then rub off a good quantity of soap to the wetted flannel and commence to rub with the flannel, downwards towards the finger-ends, holding it firmly with the left hand. Continue this process until the glove, if white, looks a dingy yellow; if colored, till it looks dark and spoiled. Lay it to dry; and old gloves will look almost new, being soft, glossy, smooth, shapely and elastic.

To Wash Summer Curtains.—The large white muslin or lace curtains, which are one of the ornaments and glory of summer, may be taken down one day, washed and put up again the next, with no damage to themselves, and very little trouble to the owner. When taken down, tack strips of coarse muslin, about half a foot deep, all round; this is to come off again when finished. Let them steep well in cold water; they should not be rubbed, but gently squeezed and pressed with the hands from the cold into the warm water, and then scalded instead of boiled. After being slightly blued and starched, they can be stretched on the parlor carpet, held tight with pins stuck into the muslin border a quarter of a yard apart, and remain there all night. They should be laid down the last thing in the evening, and the door locked to prevent unnecessary intrusion (beware of the cat). They will be found quite dry and stiff in the morning, and look as well as new. The border must then be taken off—which was only required to prevent the pins from tearing the edge, and to keep it from having a scalloped look. Lace veils, anti-macassars, and short curtains can all be done in the same way

FACTS ABOUT FANCY WORK, ETC.

Crochet Work.— For some time the fancy work known by this name was out of favor but it is again popular, and will always find more or less favor because of its utility and the beauty of many patterns which are produced. A great many useful and serviceable, as well as beautiful articles may be supplied for the toilet, for chairs, tables, stands, fancy articles, etc., at little cost. There are books upon the subject which give instructions for working any pattern, however difficult it may appear. It is an evidence of good taste and refinement to see chrochet-work in a home, as well as being an evidence oftentimes that the young ladies, or the female members of the household are not indolent.

Cone Work.– A great many useful and ornamental articles may be produced in cone work. Nature furnishes an innumerable quantity of articles that may be turned to account in decorating the home. Some of these things are referred to elsewhere in THE HOME GUIDE. The collection of materials for cone work is an interesting pursuit, and adds much to the pleasure arising from a ramble in the woods. The best time to collect material for cone work is in autumn. The collection may comprise not only a varied assortment of cones, but acorns, beech nuts, nuts of various kinds, the knotted ends of twigs, etc.

Having obtained a supply of material, the next thing is to assort it, putting each kind into a separate box or basket. Pull the large cones to peices, taking off each scale singly, save the extreme end or point of the cone, for it will be found to be of service in adding to the variety.

Instructions telling how to make a card-basket will show the method employed for making all articles of cone-work.

Procure some strong card-board and cover with brown paper by means of glue; then having chosen a shape, cut out the card-boad, say about nine inches by seven; by cutting carefully with a knife, you can save the center piece which forms the bottom of the basket. A straight strip about an inch and a half wide and the length of the circumference of the center piece, will give the size of the piece to be sewed on the tray. The handle can be straight or shaped according to taste. These several pieces must be strongly stitched together, the straight strip to the bottom or center piece; this forms the tray. Now take the narrow strip and sew its inner edgé to the top or upper edge of the tray; in all cases sewing over and over as strongly as possible. Then bend the marginal piece so as to make it curve downwards which adds much to the gracefulness of the shape.

Next proceed to ornament your card basket, beginning by stitching with strong black thread all round the edge of the marginal strip, the scales stripped from the large cones. Put them on singly and let them overlap each other slightly. Add a second row and then two rows the reverse way. There will then be a space uncovered with the scales, which must be covered with the various kinds of articles you have, making a rich wreath or border. Be careful to cover this over the card-board entirely, as spaces showing the framework would look bad. Many small things may be put in with glue; such as an acorn here and there, the extreme point of an cone, or other articles that are appropriate. A little ingenuity will suggest many ideas to the operator which will tend to the beauty and perfection of the work.

The handle must be treated in the same way as the lower part of the basket; one row of the scales stitched to each edge will be sufficient, and in making the wreath for the handle use the smallest cones; select the variety which has been used in the wreath around the basket. A bonnet wire stitched along the under side of the handle will strengthen it, hold it in place, and retain the shape desired.

The next thing is to varnish the work, using the best copal varnish; apply it with a camel's hair brush of moderate size. Be careful to insert the brush into every little crevice. Now set your basket away where it will be entirely free from dust, and let it thoroughly dry before lining it. The lining should be of some light colored silk or satin. Amber is a very good color for the lining, as it contrasts well with the brown tints of the cones. Now cut a piece of wadding, the size and shape of the bottom of the basket and also of the strip going round; cover these with the silk, and stitch neatly together in the form of the basket. Put round the top a quilling of narrow satin ribbon, the same shade of the silk, and after having done the handle of the basket the same way, and stitched it very strongly to the basket, put in this lining, which will fit without any further sewing. Paste paper over the stitches underneath the basket, and your work is done.

The same process in making other articles such as brackets, boxes, vases, stands for hyacinth glasses, etc., is to be followed. Picture frames may be made also in this way that are very beautiful.

Leaf Work.—A number of pretty fancy ornaments may be made with leaves, properly preserved. Brackets and picture frames may be made to resemble carving. The variegated and beautiful tints of many autumn leaves are excellent for such work. An expert in this kind of ornamentation gives the following directions: "Gather a good assortment which may comprise every tint from scarlet to yellow, and from yellow to green. The red beach and the sumac are very useful, and so are the oak and the ferns. Smooth every leaf on the wrong side with a hot iron, holding it down a minute or two. Any leaves that are not flat must be soaked in water first. Then oil them on the right side. Next take a number of fine wire stems, and fix every leaf to a stem. Lay the leaf over the wire which should extend the entire length of the leaf to support it. The leaf is attached by its stalk to the artificial stem. Use the fine, green covered reel wire, necessary in wax flowers, for this. Afterwards cover the stems with green tissue paper or brown Berlin wool, and join them together in sprays. The individual leaves on each spray must be of the same kind and color. Afterwards mix them and arrange the sprays according to taste. Oak leaves and acorns, gummed on a card-board frame, make good brackets, boxes, and picture frames. Acorns and berries used in this way should first be cut in half.

Skeleton Leaves.—The method of producing skeleton leaves now employed is very nearly the same as that employed since 1727, discovered by a German anatomist. But skeleton leaves were produced long before that time, though the art was lost for nearly a century.

The first thing to consider is the choice of leaves. A knowledge of botany, though not necessary to this work, is quite useful; but there are one or two things which must be borne in mind. There are two great divisions in the vegetable world called oxogens and endogens. In a oxogenous leaf, the veins branch at angles from a large central vein or mid-rib. In an endogenous leaf, the veins start from the base of the leaf, and curve upwards to the point. Few leaves of the latter kind will be of any use for making skeletons, while nearly all of the oxygenous leaves may be used. The leaf may be roughly divided into three parts: the veins to convey the sap; the fleshy matter filling up the spaces between the veins and the outer skin. The object in view in skeleton leaves is to separate all these, retaining the veins intact which form the skeleton, and the secret of this is by maceration, and the simplest way as well as the most certain process of doing this is to lay the leaves in water until they partially decay, allowing the skin and fleshy matter to become decomposed and stopping the process before it attacks the fibres. This method of skeletonizing leaves is given in an English work:

"It is quite plain that unless perfect leaves are gathered, the result will not be perfect skeletons; and indeed, great care should be exercised in the choice, for a very slight scratch or blotch in the leaf will render the skeleton imperfect. The leaves should be well matured; young leaves, with few exceptions, are useless; consequently they must not be picked at the end of a branch but low down where they are older. They should not have suffered much from the sun and wind, or the edges will probably be imperfect, and they must not be gathered too late in the season, or they will be getting brown and leathery. For most leaves, July is usually the best month, but the nature of the season makes a great difference. A good plan is to hold the leaf up to the light, when a defect is generally very readily seen. Evergreens are good late in the autumn, but they may be picked at almost any time, having due regard to the age of the leaf.

"A large number of leaves should be gathered in preference to a few, they are then to be placed in an open vessel a small tub or pan, or anything available and covered with water (rain water preferred) and placed in the open air, exposed to the sun; the loss of water by evaporation being made up as required. After two weeks they may be examined at intervals according to discretion say twice a week, but oftener, if the weather is warm; and any leaves that are found to be soft and pulpy may be removed to a basin of clean water.

"The maceration is the most unpleasant part of the whole business, for when the vessel is disturbed for the purpose of taking out the decayed, pulpy leaves, the stench is often unbearable, and the leaves look so filthy, that it does not seem possible that such beautiful results can be arrived at by these means.

"A word as to removing the leaves. Until practice has taught experience, do not attempt to remove a pulpy leaf, at any stage of the process, by means of the fingers; but have ready some cards of various sizes—anything of the sort will do—gently cause the leaves to float, then slip a card underneath, and lift it from the water for examination. When immersed again it will float off uninjured. Without this precaution, the novice is almost sure to destroy the decayed leaves; for, if carelessly lifted out, they will often break by their own weight.

"When the decayed leaves are collected in the basin of clean water, the operation of cleaning commences. It will be necessary to have at least two brushes, one a soft camel's hair, as thick as an ordinary lead pencil, and a stiffer one, something like those used by grainers; or an old tooth-brush will do very well. A leaf should be floated on to a card, lifted out of the water, and gently brushed with the soft brush until the skin is cleaned off; then reverse the card and leaf in the water, and again slip the card under the leaf; the other side will then be uppermost; this again must be gently brushed to clean off the skin, when usually the fleshy parts will wash out as loose, green colored matter, leaving the clean skeleton on the card. Sometimes small portions of green matter will adhere to the skeleton, when the soft brush must be again applied; if that does not move it, use the hard brush, but always with the greatest possible care; and it must never be used with a sweeping motion, but always with a downward, tapping motion, or the skeleton will inevitably be destroyed. Another basin of clean water should be ready at hand, and the card with the cleaned skeleton should be immersed, and the skeleton left in the water while other leaves are cleaned, or until a convenient opportunity occurs for bleaching them. It is always better to bleach the skeletons immediately they are cleaned, for if they lie very long in the water, they will sometimes take a brownish tint, which is not easily got rid of.

"The skeletons may be bleached in various ways; but the simplest, and perhaps the best, method is to get some chloride of lime and well mix with water, allow it to settle, and pour off the clear liquid for use. If this is done before commencing the cleaning operation, the clear liquid will be ready to receive the impurities. Of course, the card should be immersed in the solution, allowing the skeleton to float off. The time occupied in bleaching varies — a strong solution bleaches quicker than a weak one; but experience will show when a strong solution may not be used. Some skeletons take longer to bleach than others; indeed, they will sometimes be destroyed by the length of time they have lain in the solution, and yet not be bleached perfectly white. A delicate leaf, such as the ivy, will often be beautifully white in a couple of hours; while an obstinate sallow leaf has been in the solution until it has fallen to pieces, of a whitey-brown color. When the leaves are sufficiently bleached, they must be lifted out again on the card and immersed several times in clean water, and then finally left for, say half an hour, in a fresh basin of clean water. After that, again float them on to a clean card, taking care that they are as flat and as near their natural shape as it is possible to get them; the assistance of the camel's-hair brush will be of great service here. When nicely arranged on the card, lift them out, and let them drain; then dry them off as quickly as possible, to prevent any dust settling upon them They may be dried in front of a fire, or may be put into a warm oven for a short time; only see that they do not get baked brown, as they cannot be bleached again in that case. When dry they usually adhere to the card, but if the card be bent it mostly causes the skeleton to leave it, if not, the point of a pin will raise it at once.

"They are now sufficiently strong to bear handling with ordinary care, but not until now; for it must not be forgotten, that there is great danger in handling them while they are pulpy, unless a card be used.

"Most leaves and seed-vessels may be put to decay in the same vessel, but the holly must always have a vessel to itself, or its spines will injure and destroy the remainder. It gives some trouble in cleaning, from the twisted shape of the leaf, otherwise it is tolerably easy, and if the skin be nicely cleaned off the horny margin and spines, and then well bleached, it fully repays the trouble. Of course the holly, from its shape, cannot be laid upon a card; moreover the margin is so strong that, when the rest of the leaf is quite soft, it may be handled with impunity.

"No rule can be laid down as to the time taken in decaying, except that old leaves take longer than young ones. A properly matured ivy or aspen leaf will generally be ready to clean in a fortnight of warm summer weather, while an old magnolia leaf has often lain eighteen months and then wholly decayed, without in any way separating the skeleton. Leaves containing tan cannot be done by this process, for the tan resists decomposition. A method sometimes successfully adopted with oak leaves is to put them into a vessel with large numbers of caddis-worms, which eat away all of the soft parts and leave the skeleton which is then bleached in the ordinary way.

"The list of subjects available for this subject is so large, that we can only mention a few, to give the learner a start. After that the woods and fields, the gardens and green-houses, will be continually offering fresh subjects for experiment; and the wonderful diversity of form and structure laid bare will as continually incite to fresh efforts. All poplar leaves may be said to be easy; the silver poplar, or abele, is especially easy and beautiful; so is the aspen. The apple and pear of the orchard, the crab-apple of the wood, and the various ivies are also easy. The willow requires some care, as it is very delicate: gathered early it decays quickly. The maple is another beautiful leaf; it must be gathered young, and cleaned with the hard brush and a tapping motion. The seed-vessel of the thorn apple, of henbane, of the wild poppy, of the Canterbury bell, and of the wild columbine, all offer easy subjects.

"After being bleached, they may be mounted in various ways, according to taste; but being beautifully white if well bleached, their appearance is much improved by a dark background; so that, if arranged as a boquet under a shade, the bottom should be covered with black velvet, and some delicate leaves displayed about it. If forming a group to hang against the wall, the back should be covered black velvet

Imitation Leaves.—Cover a smooth piece of board with a thin layer of French chalk (steatite); then place a leaf on it and make it lie as even as possible. Next take a large piece of modeling-wax and soften by holding it before the fire, or in hot water, and press it down carefully over the leaf great care being taken to fill up all the cavities. When the wax has cooled remove it from the board, to which it is prevented from adhering by the steatite previously applied to its surface, and which now adheres to the face of the wax. Then warm another piece of wax and apply it over the other surface of the leaf. When cold separate the two pieces of wax and remove the leaf they enclose before the composition has had time to become hard, when it will be found that we have thus obtained an exact mould of the leaf employed. Before using these moulds the interior should be carefully moistened with water to prevent any minute air-bubbles adhering to its surface. Then fill each mould separately with a very thick cream of plaster of Paris and water and then set them together until the plaster sets sufficiently hard to be removed. The imitation leaf is then to be painted with water-colors to resemble the original, and allowed to become as dry as possible. The plaster cast is then to be placed in melting paraffine to render it waterproof and give it a glossy surface; and is afterwards to be carefully polished with steatite and the tip of the finger, or with a very soft rag.

Bead Mosaic—Bead work is not much used at present, though generally understood, for it is very simple. Bead mosaic differs from ordinary bead work in this respect—that the beads, instead of being sewn upon canvas, or some other textile fabric are fastened by cement to some hard and firm background such as are composed of metal or wood. The art is applicable to many purposes for which common bead work is unsuited; and besides it is executed with greater rapidity, possesses greater durability, and is more easily repaired in case of injury than that method of decoration. Mastic cement is the strongest. It is made by dissolving mastic in as much spirits of wine as will keep it liquid; then in another vessel dissolve in brandy as much isinglass as will make about two ounces of strong glue; add a small quantity of gum galbanum. Mix the whole together which is done by exposing the vessel it is in to sufficient heat; put it in a bottle and when wanted for use dissolve it by putting the bottle in warm water.

The design to be produced should be drawn upon the ground work of metal or wood; the beads are then put on and finally linseed oil should be spread over the work and allowed to run between the beads, and well worked with the brush into the interstices. This will at the same time thoroughly cleanse the surface from any cement and by forming a putty between the beads, combine them into a compact mass. The face of the beadwork may be wiped clean with a soft rag. In a few days, when the linseed oil and whitening have become perfectly dry, and have set, the whole will be so firm that it will bear any reasonable amount of rough usage without injury.

Crayon Drawings.—Pumice paper for drawing on with crayons is made by coating the surface with a mixture of very finely divided pumice stone. Another way to prepare it consists in painting over the surface of the paper with gelatine or starch, and then dusting over it some pumice stone reduced to a very fine powder. It may also be prepared by rubbing over the face with ordinary paper and a piece of smooth pumice stone and afterwards carefully removing every particle of loose powder by means of a roll of white paper passed gently over the surface.

A fluid for fixing crayon drawings is made by adding three quarters of an ounce of isinglass to two and a half ounces of distilled vinegar. Let them remain for twenty-four hours, then pour in a pint of hot water and keep the liquid hot until the isinglass is dissolved.

The fluid is then to be filtered through white blotting paper, and placed in a stoppered bottle with the same quantity of rectified spirits of wine. To use this liquid the drawing should be held horizontally by the four corners, the surface with the drawing on it downwards, care being taken that it is not allowed to touch anything. The fixing fluid is then painted over the back of the drawing with a very soft camel's hair brush, sufficient liquid being used to allow it to penetrate through the substance of the paper and render the crayon marks moist. While doing this, great care must be taken not to apply more of the liquid to some parts of the paper than to the rest. If this is not attended to there is danger of the drawing appearing stained when finished. The back of the drawing is then to be gone over again with the brush taking care to use less fluid than previously. When this is done the drawing is to be turned and laid on some flat surface to dry.

To Bronze Images, Etc.—Statuettes, medallions, vases, and other objects in plaster of Paris, may be made to resemble bronze by first rendering the plaster a non-absorbent with dry linseed oil, and then painting it with a varnish made by grinding waste of gold leaf with honey or gum water, or with one made of mosaic gold, which consists of an alloy of copper and zinc, ground up with six parts of bone ash. Another method is by first painting the article, after it has been rendered non-absorbent, of a dark color, made of Prussian blue, spruce ochre, and verolite, ground in oil; before this becomes quite dry, bronze powder, which can be purchased of various shades and colors, should be dusted on those more prominent parts which may be supposed to have worn bright.

Plaster casts may also be made to resemble bronze to a great extent by brushing them over with graphite, which is brilliant black lead. The above methods will with little modification be found to answer equally well upon paper, card board, and wood. For paper or card board the material should be ground with white of egg, or spirit varnish, and afterwards be brushed or burnished when dry.

Ivory Ornaments.— Heat and dryness are injurious to ivory. Ivory ornaments should never be exposed to the direct rays of the hot sun nor placed on a mantle-shelf, as they are very apt to split under such circumstances. Heat also warps them like wood. When ivory becomes discolored by being kept, the white color it previously had may be restored by soaking the article in water and then when wet, exposing it to the action of light, while shut up in a well-closed glass case. When ivory has been kept a long time it diminishes, owing to the loss of gelatine of which it is partly composed. This may be remedied by soaking the article in a solution of that substance.

Sealing-Wax Ornaments.—Sealing-wax of different colors may be made at home, if it is desirable to do so. Common hard red sealing-wax is made as follows: Take of rosin six ounces and powder it, add four ounces of red lead; two ounces of vermillion, or less if expense is objected to; and the same of shellac reduced to powder. Mix these ingredients well and melt them over a slow fire. When thoroughly incorporated and fused, work it into sticks of any size required. Sometimes the vermillion is left out altogether, and for common wax, the shellac also.

Black sealing-wax is made in precisely the same way except ivory black is substituted for red lead and vermillion.

For green sealing-wax the process is the same except the coloring matter is finely powdered verdigris.

For blue, the coloring matter used is verditer or smalt, or a mixture of the two.

Yellow color to sealing-wax is imparted by massacot, or chrome yellow.

Purple coloring is produced by a mixture of vermilllon and smalt in any proportion desired.

In all cases the incorporation of color must be effected with caution in an open copper pan.

Variegated sealing-wax is made by melting several kinds separately and mixing them when partially cooled.

Sealing-wax with gold specles is made with an admixture of gold-colored mica spangles, talc, or other matters, after taking it from the fire.

Sealing-wax is employed for making ornaments in imitation of coral, ivory, jet, etc. Very beautiful card-cases, frames for photographs and other articles are made of this material. No particular skill is required in the process. Seals may be obtained by taking casts from medals, cameos, ladies' ornaments, etc. It is easy to take such casts. Oil the object to be copied. Mix plaster of Paris into a thick paste. Fill a woolen or paper pill box, or other box with the paste, and press the medal or other article, previously oiled, on the plaster. Leave it to dry; then remove it and tear the box from the cast. From this the impression is given to the sealing-wax. The seals are then gummed on to a card case, fancy box, or other article, and the spaces between them nicely filled with wax, a little at a time. A large watch key may be used to stamp the soft wax in the spaces and thus add to the appearance of the article.

Imitating Tortoise-Shell.—Horn articles are sometimes made to resemble tortoise-shell by the following process: Lay the following mixture on with a brush: Take equal parts of quick lime and litharge and mix with strong soap lees; let this remain until it is thoroughly dry, brush off and repeat two or three times, if necessary. Such parts as are required to be of a reddish-brown should be covered with a mixture of whiting and the stain.

Shell Ornaments.—Very beautiful ornaments may be made by using small shells of a common kind. Boxes are covered with them as well as frames for pictures, small mirrors, etc., while beautiful groups of artificial flowers may be made with them. Most of the shell flowers are made by means of a cement in the first place. Melt to a moderate consistency a quantity of gum tragacanth and a little alum, mix this into a thick paste with plaster of Paris and a small piece of sugar of lead. Make a ball of this, the shape of an orange—that is a flattened round—and about half or one third the size of an ordinary orange. Let this nearly dry. Then take a stiff, strong wire, long enough for a flower-stem. Wind it round with a strip of green tissue paper, half an inch wide. This is to be thrust into the ball of cement, upon which the flower is to be constructed. Take a stout piece of cord and cut a hole in it to admit the wire, and use a tumbler or vase long enough to hold the wire comfortably, letting the card rest on its top, the ball of cement being outside. This keeps the work steady. Set the shells on the cement according to the flower to be represented, and let it remain untouched till the flower is quite dry. Then take a few short leaves, (such as are used in trimming bonnets), cut off the stalks and remove the wires, and gum them to the back of the flower so that they will project all round partially. When a sufficient quantity of flowers are made, take a pretty wicker basket, line it with green tissue paper and fill it with cement. When this is dry, place the flowers in, and put leaves about them.

In this manner, roses, pink rosebuds, china asters, white May blossoms, lillies of the valley, the passion flower, dahlias, ranunculus, and many other flowers are imitated. Filling the basket with cement holds the flowers in place, and prevents the basket from tipping over. The shells are brittle and easily broken, but will last from one generation to another if properly taken care of.

Embossing on Glass.—A rich decoration on glass consists in what is called embossing. Plain embossing is very simple and easily accomplished where the pieces of glass are not of large size. The chemical agent employed to act on the surface of the glass is flouric acid, which is formed by pouring sulphuric acid over "blue-john" or flourspar. This chemical must be handled with care as it will destroy the clothes wherever it touches and is apt to cause sores on the flesh it comes in contact with. It must be kept in a gutta-percha bottle, and when under treatment should be laid in a gutta-percha tray. Its corrosive properties renders glass unsuited for containing it.

In embossing on glass, those parts that are left transparent must be covered with some substance which will resist the acid, and that generally used is Brunswick black, which is a preparation of asphaltum. The design to be embossed is to be drawn upon paper, and the glass being laid over this pattern will show through, and its lines accurately followed in laying on the Brunswick black with camel's hair brush. After preparing the design cover the reverse side and edges of the glass with a mixture of beeswax and tallow melted in equal proportions so that the acid cannot operate upon them. This must be applied while it is warm, with a brush. The glass is then to be laid on the gutta percha tray, and the flouric acid diluted with an equal quantity of water poured on. While the glas is in this bath, stir and dabble the fluid upon it with a pad of cotton wool attached to a stick. In a few minutes, (according to the depth required on the glass), remove the glass and thoroughly wash it. The wax and grease will come off by holding the glass before the fire, and Brunswick black can be cleaned away with a rag of turpentine.

Tasteful Trifles.— A great many tasteful articles can be made at home, out of odds and ends, which accumulate in the every-day employments of the home. Toilet articles, a gentleman's toilet case, a key bag, a spectacle case, a boot and shoe tidy, a paper case, etc., etc., costing comparatively nothing but a little time, can be made, which are not only pretty but serve some useful purpose.

Knitting of Various Kinds.— In this connection, fancy knitting is referred to. The wools employed for this purpose are the Shetland, fleecy, single and double German and Andalusion. The finest and most delicate is Shetland, and it is also the most expensive; whenever weight and warmth are required fleecy wool is the most suitable; for cushions, antimacassars, etc., German wool is preferable; for articles that may require frequent washings such as childrens' knit jackets, shoes, etc., Andalusion wool is best as it is not so liable to thicken in washing and the colors in it stand well.

The terms used in knitting, (and to understand these is very necessary), are these:—To cast on, is to make a running loop in the yarn and slip it on the needle held in the left hand; through this loop the needle in the right hand is thrust and the yarn is passed over the end of this needle and drawn down to the left, when, by inserting the end of the right hand needle beneath it, it is drawn through and passed over the end of the left hand needle, thus forming a stitch upon it. This is continued until one-third of the stitches required (if for a stocking), are formed upon the needle; then a second needle is taken in hand and the same number of stitches cast on, and then a third needle with a like number of stitches, which forms the required number for a stocking. The two ends are then joined and the work proceded with. It is not designed to describe plain stocking knitting here. Purling or turning is making a seam by turning a stich in alternate rows in the middle of one of the needles. A turn is to knit two rows in the same stich, one forwards and one backwards. A row is composed of the stitches from one end of the needle to the other. To bring the wool forwards: in this, after the stitch has been knit, a second one is made by simply bringing the wool to the front. To pass the wool over: in this, after making a purled stitch, a second stitch is made by passing the wool over the needle. To knit two together: in this, as in narrowing, two stitches are taken together and knit into one To slip is to pass a stitch from one needle to another without knitting it. A loop stitch: in this the wool is brought before the needle, and in knitting the next stitch returned to its former place.

When knitting and purling has to be done in the same row it is obvious that after purling a stitch the wool must be passed back under the needle before the next stitch can be knit, and before the next stitch can be purled after knitting a stitch the wool must be brought forward under the needle. These processes are different from passing the wool over, and bringing the wool forward, both of which manipulations are for the purpose of making stitches. Fastening on is best done by placing the two ends of the wool contrarywise and knitting a few stitches with both together.

The stitches most in use are the following: *Brioche.*— In this the wool is brought forward, one stitch is slipped and two knit together. *Fringe pattern Stitch.*—Any even number of stitches may be cast on and the wool turned round the needle and brought in front again, then two knit together being taken in front. *Double Knitting.*—Any even number of stitches may be cast on. The wool is brought forward and one stitch is slipped; then the wool is passed back, and one stitch knit, the wool being twice round the needle; in each row the stitch that is knitted forms the slip stitch in the next. *Barley-corn Stitch.*—Any uneven number of stitches may be cast on. The first stitch is slipped, the wool being kept in front of the needle; then turn round the needle so as to bring it in front again, and two stitches knit together will appear as if tied. *Waistcoat Stitch.*— In the first row alternate stitches must be knit and slipped; in the second row one stitch knit, the wool brought forward and one slipped, then the wool passed back and one stitch knit; in the third row one stitch must be slipped and one knit; in the fourth row the wool is brought forward and one stitch slipped then passed back and one stitch knit. *Herringbone or Shetland Stitch.*—Any number of stitches that can be divided by four may be cast on. The wool is passed over and one stitch slipped; then one stitch is knit and the slipped stitch passed over it; then one stitch is knit, the wool brought forward, and one stitch purled. *Raised Stitch.*—Any even numbes of stitches may be cast on. The first row is knit with a small needle, the wool is brought forward, and two stitches knit together; the second row is plain knitting with a large needle, the third is plain knitting with the small needle;

and the fourth is purled with the large needle. A light stitch for a shawl—Any even number of stiches may be cast on. The wool is brought forward and two stitches knit together alternately to the end of the row.

With these stitches any desired pattern may be knit. Leaf and trellis pattern, cable, shell, gothic etc., etc., may be used, and very beautiful designs adopted for various useful articles.

Berlin Wool Mats.—A pretty kind of moss is used for making borders to mats and covers to tea caddies, in conjunction with a few flowers made in Berlin wool disposed about in an artistic manner. The manner of making moss is with varieties of shades of green, green yellow, blue green and plenty of dead leaf green. Cast on a steel needle, twenty-four stitches and knit up all the wool in the plain stitch as tightly as possible. Take the colors at hazard one after another, using a skein each. It is dipped in water when finished, baked in an oven and then unraveled. The method of making mats of Berlin wool is generally understood.

Card Baskets.— There are many ways to make home-made card baskets, some of which have been indicated already. Bead-work, Berlin wool worked into perforated paper, shell-work, cone-work, may be employed for this purpose. A very pretty card-basket is made of glass. Procure six pieces of ground glass, four inches square, and one piece for the bottom having six sides of four inches each to fix the six pieces to. Bind the six pieces with colored ribbon, and sew the ribbon together edge to edge; this fixes the pieces together; and the top of each joint with a bow of ribbon. The basket may be made to flare by having the pieces cut properly. The glass may be ornamented by painting a pattern on it of copal varnish with a camel's hair brush. Or clean glass may be used, and pictures or designs attached to the sides.

Book Slides.— Books should be taken care of, and to do this there must be a place for them if it is ever so plain. A book-case is not always within the means of persons, and therefore book-slides may be made in which books may be kept. These may be plain or elaborately made in fret-work, or carved work. A neat frame in walnut or oak, or other wood, stained, can be made to hold the slides, or they may be suspended on the side of the wall, by strong cords such as large pictures are suspended by. They may be covered with fine netting of some pleasing color which will preserve the the books from flies and dust.

To Stuff Sofa Cushions.—Cut up or tear into small pieces any waste paper and fill the case. This makes a very cool, soft cushion.

Souvenirs.—Very pretty souvenirs and inexpensive presents can be made, such as needle-books, housewifes, music-wrappers, book-marks, watch cases, toilet cases; and the details may be varied according to the taste or means of the maker. These little things can hardly fail to be agreeable to the recipient of such presents.

Handsome Curtains at Small Cost.—Take ordinary green baize, with bands of the webbing used for saddle-girths sewn upon it. Two or three of these bands should be sewed near the bottom ot the curtain. In temporary decoration these curtains are a cheap and useful expedient.

Stuffing and Preserving Birds and Other Animals.—There are three methods employed in this art. The only one practicable, (except by a professional taxidermist) is the ancient and usual one of stuffing the skin and supporting it on wires.

Cotton is the best material for stuffing birds, though tow hay, moss, etc., are often used; but no dried marine plant should be used for it will inevitably attract moisture from the atmosphere, and sooner or later cause the destruction of the animal stuffed with it. Iron and brass wire of various degrees of fineness, which must have been well annealed in order that it may bend freely, is required; the kind of wire used by makers of artificial flowers is one which will be found of value; cork, (ordinary bottle corks are suitable), and thread, cotton and fine silk, and glass eyes of various sizes are necessary to this art.

The tools used in stuffing animals are one or two sharp knives, (scalpels are the best), for skinning, a couple of pairs of sharp pointed scissors—one pair with one point longer than the other—will be useful; large and small forceps, camel's hair brushes of various sizes; straight and curved pieces of wire, made spoon-shaped at the ends (for taking out brains, etc.); setting needles for arranging the feathers, &c., of which the larger may be made of shoemakers' awls, and the smaller of common needles fixed to handles, and having their points curved; straight pieces of wire which taper towards their points, fixed to handles for thrusting down the legs of birds before introducing the leg wires, and which may be made from needles of various sizes; other pieces of wire blunt at the end, in handles for stuffing the thinner parts, as the neck; a long piece of cane also for stuffing with. A few other tools will be convenient, as callipers, pliers, brad awls, a hammer, a file, etc.

There are various preserving compounds for preserving the skins of birds and other animals. Mix together well two drachms of white arsenic, two drachms of corrosive sublimate, six drachms of powdered camphor, one ounce of nut-galls, half an ounce ot powdered capsicum, half an ounce of sal ammoniac, and you have a powder that will preserve the skins of birds.

A preservative solution is made as follows: Corrosive sublimate one drachm, spirits of camphor six ounces, spirit of salt two drachms. The corrosive sublimate must first be dissolved in the spirits of camphor, and the spirit of salt added afterwards. The solution is to be applied to the inner side of the skin, before stuffing, with a brush.

There are other compounds for this purpose, but these are effectual. All of them are highly posionous and care must be observed in using them.

Gold Fish.—The care of gold fish is a pleasant pastime. The fish acquire a degree of tameness and docility which is pleasing, for they appear to know those who feed them, and often come to the top of the water when they approach.

The food of gold fish is fine bread crumbs, small worms, flies, and the yolks of eggs dried and powdered, given once or twice a day. It is necessary to change the water frequently for the health of the fish. The fish must be removed, and the best way to effect this is to have a net made of bobbinet with a wire circular top and a stick attached as a handle. If the globe is a large one, it is better to remove the water with a syphon, letting the fish remain in the globe. A little gravel or rock-work with grass and water plants at the bottom of the globe is grateful to the fish, and adds much to the appearance.

Canary Birds.—Canary birds have so long been kept as household pets that it is considered as legitimate to keep them as to keep a cat or a dog. It is doubtful if the domesticated canary can be considered as well off in a state of freedom as in a cage, provided always that in the latter case it is well taken care of.

The cage is the first thing to be thought of, and it is of great importance. From "Kidd's Own Journal," the following is taken in reference to this subject: "The cages in general use are altogether ill-adapted to comfort, being open to the air at every point, and admitting a succession of draughts from morning till night. Above all things, avoid the circular, open-barred brass cages, with sliding doors, now so much in vogue. They are frightful instruments of destruction. The brass, when water lodges on it, presents gangrene, and, when this is tasted, produces sometimes a lingering, sometimes a sudden death. All manner of cheap cages, too, must be regarded as inadmissable; they are made of dry deal and invariably harbor vermin. The proper description of tenement for a canary is a mahogany cage thirteen inches long, eleven inches high, and eight inches deep. The top, back, and one of the sides should be of wood; the other side, as also the front, should be of tinned wirework, so as to admit the air, and at the same time exclude a thorough draught. Just above this wirework, at the side, should be a wooden slide, running in a groove; it might then be used or not, as occasion might require. The cage inside should be painted white. A long, square, but narrow perch should run from end to end, about the centre of the cage; and a second, of a similar kind, directly behind the two tin pans inserted at the front of the cage, one on either side, to hold the seed. In the middle of the wirework, at the front, let there be a hole sufficiently large to admit the bird's head while drinking. Never use glasses or fountains for holding water, but receptacles of tin suspended by bent wires. Glasses and fountains are apt to get displaced, and many a prisoner dies for want of water, thus unthinkingly removed beyond his reach. By having these two perches only, the birds feet will be kept clean, and he will have plenty of room for exercise, without injuring his plumage. In addition to the water supplied in the tin, it is always expedient to have a square earthenware bath fitted in a mahogany frame, ready for use. These are so made as to be easily suspended on the doors of the cages, when the latter are opened. They are over-arched with wire, to prevent the bird escaping, and are obtainable of any dealer."

It is not advisable to put the birds up for breeding too early in the season. When birds are sitting it is not advisable to permit them to wash all over, but they may bathe judiciously without injury to the eggs. The material for nest building should be clean; especially should it be free from vermin. Sometimes the parent bird neglects to feed or properly care for the young ones. This results from pairing at the wrong time of year, and from pairing birds before they are old enough. In such a case procure a piece of stale wheaten bread; grate and mix it with some bruised and scalded rape seed, and a small portion of the yolk of a hard-boiled egg. Remove the nestlings to a warm corner and cover the cage up to exclude draughts. Feed with the above food every quarter of an hour, using a sharp pointed, small stick. Occasionally let a drop of water fall into their open beaks. When it is found desirable or necessary to feed young birds by hand they should be removed from the nest when they are about nine days old. Unless they are neglected they should not be removed until they are five weeks old, and their food should be gradually changed. After this keep them in a warm room and within hearing of a good songster. In a state of celebacy the average duration of a canary's life is from sixteen to twenty years; but when kept for breeding it rarely exceeds ten years and oftener it is less than that.

The feed for canary birds is canary seed, and the rape or flax-seed; the former should be large and glossy and the latter large and new. A piece of cuttle bone should be placed between the wires of the cage. Fresh water must be supplied every day, and the bird will take a bath whenever it desires to do so. During the winter season canaries should not be allowed to remain in a cold room; in summer give them plenty of fresh air, but they must not be placed in draughts, for they may, and often do contract colds, asthma and other diseases from such indiscretions. Observe cleanliness for many of the disorders of birds arise from a lack of it. The cage should have a false bottom which may be drawn out and cleaned. This false bottom should be covered with sifted sand. The perches should be of proper size for the bird's feet so that the claws can grasp it. The bird's feet should be kept clean. Keep the cages free from vermin; examine the cage thoroughly every day and if any vermin is found in the crevices or cracks, remove the bird and wash the cage thoroughly with a mixture of sulphur put in boiling water and soap. If any parasites are found on the bird, syringe him daily with the above mixture when cold. A piece of old mortar and gravel at the bottom of the cage will help to keep the birds healthy.

Birds should have green food occasionly, but not too often.

When a canary moults in July and August, according to the warmth or coldness of the season all that is necessary to be done is to keep him quiet and free from draughts. Once a week give him a small quantity of raw beef scraped and moistened with water, and occasionally let him have a little of the yolk of hard boiled eggs, and now and then a piece of sponge cake, and ripe chickweed in full flower.

During incubation birds are sometimes subject to constipation. In that case a little boiled bread and milk should be given them twice a week. Lettuce leaves are useful in this complaint.

In case of diarrhœa or dysentary, as soon as its appearance is discovered mix a little rhubarb, powdered chalk and ground ginger, with the seed you feed, and give on alternate days.

If small sores or ulcers appear on the head or other parts, annoint them with sweet oil. Tumors require opening and drawing.

Wax Flowers, Fruit, Etc.— These are very beautiful ornaments, and to manufacture them but few articles are required, which may be procured at trifling expense. Persons having ordinary skill can soon learn to make both flowers and fruit of wax; and where more than ordinary skill and taste are developed, it is often the case that the manufacture of these pretty articles is made a source of considerable profit.

The most important articles required are square sheets of thin wax, made for this purpose, and comprising various colors; also some colors, (dry powder) to imitate various tints; then some tinting brushes; a few curling pins of various sizes, (these are tapering wires with a glass bead attached to the largest end); some moulds of different sizes and patterns, turned out of hard wood; also some metal leaf moulds; some wire covered with cotton to imitate the stems of flowers. For different processes of making particular kinds of flowers or fruit, a few other articles are required, but those mentioned are sufficient for most kinds of wax-work.

The learner, before commencing to make a wax flower, should procure a piece of card-board about a foot square, and divide it into circles and angular spaces. First make a circle as large as the card-board will admit of, and then seven smaller ones equi-distant apart, which will bring the smallest circle near the center of the card. Next draw a straight line from one side of the card to the other through the center, and another line across at right angles with the first line. These lines will divide the circles into quarters; then draw two more lines across the card so that the quarters will be divided equally, making the angles into eighths and the card is complete, and ready for your work.

Now take a natural flower that you wish to copy in wax and remove from it the "brocts" or outer leaves and arrange them on the outer circle of the card; next take off the leaves composing the calyx of the flower, and lay them on the next circle. If there is more than one row composing the calyx, lay them on the next circle, taking care to arrange the leaves, composing the second row either opposite or alternate to those of the first, according to the position they occupied in the flower from which they were taken. Then place the petals in order in the other circles. The inner circle of the card-board is to receive the center portion (seed-vessel) of the flower. Use very small pins to secure the various portions of the flower to the card and keep them in position. A paper pattern is next to be made of each portion of the flower to serve as a guide for cutting on the sheets of wax. These patterns, however, may be purchased ready for use.

A description of the way in which a moss rose is made will illustrate the way of making wax flowers generally.

The learner sits at a table over which is spread a large sheet of clean white paper. Some sheets of pink wax are selected of a tint similar to that of the moss rose, and the proper number of petals the exact size of the patterns are cut out with a pair of very sharp scissors, the blades of which require to be dipped often in water to prevent the wax from adhering to the steel. The pattern is laid on the dull and not the glossy side of the sheet of wax. In this way the cut edge of the dull surface, which should always be the side exposed to view when the flower is completed, will always present a sharp and cleanly cut appearance which it otherwise would not have. Great care must be taken that the pieces of wax are cut in the direction of the grain of the sheets, otherwise they will not bend so easily when curled into the shape of the flower, and will be also more brittle. As soon as each petal is cut out, it is to be laid down level on the sheet of paper until the required quantities are obtained.

The center petals of the rose are of deeper tint than those portions which compose the outside of the flower. This is done in this way:—A small quantity of color is mixed with water on a palette until it acquires the consistence of cream. The brush is then dipped into the color and passed rapidly over the dull surface of the wax, not across it. The brush should be held perfectly upright; do not dip the brush in water. The paint should not touch that part of the petal which is to join other pieces of wax, for if it does the pieces will not adhere when joined together. The stem is made of wire of the proper length and thickness; one end is bent into a loop, and covered with fragments or cuttings of sheet wax until it forms a mass which are called the foundation, to which the petals are to be attached.

The curling-pin is held in the right hand and dipped in a glass of water to moisten it, and then rolled over the petal contained in the left hand so as to curl it, and the required shape is then given by pressing the middle of the piece of wax against the stem of the curling pin. The small petals are now attached to the foundation in bunches of from three to five of wax, but the larger ones which are employed for the outer portions of the flower must be attached separately. In making a wax flower it is best to have a real flower of the kind imitated before you, in order to imitate it.

To make the calyx or green outer portions of the flower, five pieces are cut from green wax, resembling the real calyx; these are joined together and attached to the flower. The mossy appearance of the moss rose, is imitated in wax by removing the fibres from some dry moss, and having cut them into small pieces, press them gently on the surface of the calyx. The seed-cup is made of some green wax and inserted in the center of the flower, being careful to imitate nature closely and when it is placed in position the moss is applied as was done to the calyx.

Moulds may be obtained of various kinds into which pieces of green sheet wax are pressed to imitate leaves; but if preferred, wax leaves may be purchased ready for use. When the leaves are finished the other end of the wire to which they are attached is twisted as neatly as possible round the one forming the stem, and the whole is then covered over with wax of the required color.

With practice and ordinary skill this art may soon be mastered and beautiful ornaments in imitation of flowers, fruits, etc., produced at a small outlay of money. It only requires patience, care and ordinary skill to become expert in this work.

ABOUT WATCHES AND JEWELRY.

Management of a Watch.— A watch should be worn in one position, and when taken from the pocket at night, be hung up. Wind a watch every day at a stated time, and be careful that no dirt is contained in the barrel of the key; also that the key is in good order. Be careful that no dirt is contained in your watch pocket, for it may get into your watch and interfere with its action. In wearing a watch, it is a good plan to keep it in a soft wash-leather bag made for that purpose. This will prevent it from being scratched or injured by friction against the rough lining of the pocket. Never carry anything else in the same pocket with your watch. When you regulate the watch move the regulator a little way at one time towards the parts marked "fast" and "slow," until the watch runs right. It is not a good plan to open the works of a watch, unless necessary, as every time it is opened it is liable to get particles of dust or dirt into the mechanism. If your watch is a chronometer or has a duplex movement, remember, when setting it to correct the time, to move the hands forwards and never backwards. This is not of so much importance in other movements, but it is well to observe the same rule in all cases. A watch should be kept as nearly as possible at the same temperature, otherwise it will not keep correct time.

To Clean Gold Watch Chains and Other Ornaments. — Place the watch chain or other article to be cleaned in a solution of caustic potash, and let it stand until all the adhering dirt is removed; then with a stick take it out and rinse it thoroughly in clear cold water; next place it on a soft, clean cloth to dry. The solution is made by dissolving one drachm of caustic potash in an ounce of water. The solution may be made in a cheaper way by boiling four ounces of pearlash and the same quantity of recently burnt quick lime in one pint of water for half an hour; then pouring the hot liquid into a stone jar, and carefully stopping the mouth with a good, well-fitting cork, and letting it remain until cold; then pouring off the clear solution for use. Rings that contain jewels, and other articles in which there are gems, or paste, must not be cleaned with this solution as it will spoil them by corroding the silica in their composition.

To Clean Precious Stones.—Gems are best cleaned, especially when set by using a composition of two parts bone ashes or rotten stone very finely powdered with one of flour of sulphur. The powders are to be mixed thoroughly and a littie put on a piece of leather with which the surface of the gem is to be rubbed, and the stone is then to be brushed with a stiff hair brush. This friction with the leather and hair brush is to be repeated until the gem has gained the requisite degree of polish. Finally, clean with a piece of leather or soft cloth.

Gems and Jewelry.—There is hardly any branch of trade about which there is so great a lack of information among people generally as that of precious stones.

The value of a jewel is estimated by its rarity, its freedom from flaws, and its weight. The weight is reckoned by the carat, which is equivalent to four grains—forty-four carats being contained in an ounce.

Many jewels possess defects and are thus of inferior value, but various methods are employed to conceal their defects. The usual method employed is to set them in a metal frame, and to put some bright reflecting surface behind them. There are various ways of hiding the defects in different gems. Silver and copper foil is used to increase the lustre of a gem, in setting it in a metal frame, and the effect is often heightened by coating the foil with colored gelatine—a solution of isinglass soaked in water until it swells and then dissolved in alchol. This may be colored any tint desired by using such agents as impart the desired tint. Sometimes a defect in a jewel is concealed by painting over the back with a solution of ivory black and mastic in alcohol, leaving uncovered only the spot where the flaw is situated. In other cases that part only is covered. Minute cracks in jewels are often concealed by filling them with the juice of the garlic; and it occurs sometimes that a stone is broken during setting, and is then repaired with gum mastic in such a manner that the injury cannot be perceived. For this reason when a diamond is purchased the purchaser will do well to have the stone removed from the setting so that it may be examined critically. The presence of flaws may be ascertained by putting the diamond into either oil of anise seed or Canada balsam, and if they are moved in various positions and examined with care, the least flaw can at once be seen.

Artificial Gems. — A great many gems that pass for *real* are made of *strass*, a composition of flint, pure sand, or quartz, fused with borax, potash, and red lead. When this composition is exposed in a crucible to the intense heat of a powerful furnace, a clear bright glass of diamond-like appearance is attained. The name of the inventor of this glass or paste was Strass, from whom the term it is known by, was derived. It is the base of artificial gems other than diamonds, various mineral substances being added to give the required tints.

There are several ways to distinguish artificial from real gems. An artificial gem when examined under a powerful magnifying glass will be found to contain a number of minute vesicles, produced by particles of air entangled in the liquid glass while in the molten state as the gem was being made. These vesicles or air bubbles is conclusive as to the nature of the gem, as the real jewels exhibit nothing of the kind. Another test is, that a true jewel is much harder than *strass*: the latter being more easily scratched with an onyx or fine quartz sand. Still another test is furnished by the greater power possessed by the real gem over the artificial, of conducting heat. When a false jewel is breathed on, the moisture condensed from the breath will remain much longer than would happen in the case of a real jewel. Again place a real gem in contact with the warm skin, and it will produce a feeling of coldness sooner than an imitation jewel. When real gems are exposed to the sunshine for some time, and then placed in a dark room they will give out a certain amount of light. This phosphorescent property is not possessed by paste *strass*, and when a jewel does shine in the dark it is conclusive that it is genuine.

If a true gem is rubbed with a piece of warm silk so as to render it sufficiently electrical to attract small feathers and similar objects it will continue to exert this power of attraction from a quarter of a day to a day and a half. An artificial jewel similarly treated will not retain its electricity longer than from half an hour to an hour.

To Ascertain the Purity of Silver.— A drop of concentrated nitric acid, (aqua fortis), if allowed to fall on the metal will not discolor pure silver, but if alloyed with copper, the liquid will at once turn a bluish green. On the pure silver the acid produces a colorless substance, of silver; on the metal in which copper is present the nitrate of copper is produced having the color already stated.

THE TOILET.

Care of the Hands.— The care of the hands, so that they will be preserved white and soft, requires perfect cleanliness in the first place, and next the use of mild and emollient soaps. The kind of soap used is of considerable importance. If the soap contains an improper proportion of soda, or acids it will make the skin dry and rough. Sand soap or pumice-stone will remove roughness, but care must be taken that the nails are not scratched.

The hands are more readily cleaned with warm water than with cold, but they should be rinsed in cold water and dried with a rather coarse towel. Friction produces circulation, and is also beneficial in improving the appearance of the hands; but to preserve this, cold winds and rain must be guarded against by warm gloves and muff. When the hands become warm while working, wash them in warm water and puff them with violet powder; and if they are habitually moist the same plan should be followed. Cold water tends to increase the moisture of the hands.

To remove ink stains from the fingers, apply spirits of hartshorn. While washing the fingers drop the hartshorn on the stains and rub and wash them until clean. Fruit stains, walnuts especially, may be removed by rubbing them immediately with salt.

After a long walk, on a warm day, or a journey, bathe the face and hands in very warm water. It will remove redness and heat in a short time, and impart a cool and delightful sensation. Cold water applied to the skin while the latter is heated from fatigue is quite injurious, causing redness and eruptions which are difficult of removal. Sunburn may be prevented by the simple application of hot water for a short time. After a hot walk, if the hands and face are bathed fifteen or twenty minutes in hot water with a little aqua ammonia added to it, the effect will be very refreshing and pleasant. When the feet are sweaty and hot from the effects of a fatiguing walk, bathe them in warm water, adding to the bath a little tincture of arnica. The arms and legs may also be bathed in the same way with advantage.

Chapped Hands and Lips.— For chapped hands, glycerine applied at night is an excellent remedy. Cold cream, or a little weak zinc, camphor ointment applied night and morning will benefit chapped hands. In case of an obstinate crack apply a little friars balsam once or twice. If it is in the middle of the lip, draw the two sides together and keep them in close opposition, when the crack heals.

Skin Discolorations. — The most common discolorations of the skin are freckles about the face and hands, developed in the summer time by the action of the sun. Here are two recipes for removing these discolorations: No. 1: Elder flower ointment one ounce, sulphate of zinc, finely powdered, twenty-five grains; mix. Apply with the finger night and morning. No. 2: Sal ammoniac sixty grains, distilled water one pint, lavender water half an ounce, bichloride of mercury two grains. To be used with a sponge night and morning.

Other skin discolorations require medical treatment.

Skin Cosmetics.— A word of caution is proper here, in regard to the use of cosmetics, to be had at the stores. Very many of these are injurious to the skin and some very dangerous, while few are entirely harmless. Cosmetics include soaps, lotions, powders, and creams, and are used to give a delicate complexion or heighten the color. White cosmetics are formed of magnesia, starch, bismuth (which hardens the skin), lead, zinc, white precipitate, etc. For heightening the color, rouge and carmine are chiefly used. The only substances that are advisable for this purpose are zinc, magnesia, and starch (violet powder). And when these are used, they should be thoroughly washed off upon retiring at night so that the pores of the skin may not be obstructed. Only the mildest soap should be used to the face. Some of the preparations sold for *improving the complexion*, contain lead and bismuth in large quantities and after a while harden the skin and injure the complexion.

This preparation will soften the complexion:—Mix a little of flower of sulphur in afternoon milk—about a wine-glass full. Let it stand all night and be used before washing next morning. The milk only is to be applied to the skin without disturbing the sulphur. What is not used, throw away, and make it fresh for another application the following day.

The following lotion is much used:—Powdered borax five grains· oxide of zinc powder two drachms; finely powdered calomine powder, two drachms; glycerine, eighty drops; dilute nitric acid four drops; spirits of wine thirty drops; distilled water four ounces. Apply and finish off with a brush in such a manner as the mixture cannot be seen.

Magnnesia— There are preparations of magnesia for the complexion which are harmless, and if anything is used for this purpose, this substance, properly prepared, is very good. The best is calcined and finely powdered.

Pearl White.— This is the oxide of bismuth, and though very clear and evanscent, it is often injurious to the skin. Ladies who use it for a cosmetic ought to be aware that if it comes in contact with sulphuretted hydrogen gas, it at once turns black.

To Remove Pimples.— Bathe the face with warm water night and morning. Do not use soap, but apply the following lotion several times a day:— Oxide of zinc powder sixty grains; fine calomine powder half an ounce; bichloride of mercury one grain: glycerine one teaspoonful; rose water, six ounces. Put in a bottle and shake up well before using. When you use it pour out, (after shaking), a portion and dab on to the face, allowing the powdery substance to dry on, then brush off the super-abundant portion with a handkerchief so as to make the appearance passable.

Perfect cleanliness is highly necessary. Everything that heats or flushes the face should be avoided.

Sweetening the Breath:— An offensive breath, arising from a disordered stomach may be removed by taking ten or twelve drops of a solution of chloride of soda, or of lime, in a spoonful of water two or three times during the day. It may also be used as a gargle and these methods will effectually neutralize the fetidness of the breath. A teaspoonful of charcoal (the fine powder), swallowed into the stomach will also sweeten the breath.

When decayed teeth produce an offensive breath, they should be removed or filled, and all the dying roots removed. Rubbing the teeth with fine charcoal is beneficial in sweetening the breath if it is offensive by reason of decayed teeth or ulcerated gums.

Perfumes.—The principle of odor or perfume in plants is secreted by small sacs or glands in plants, sometimes in the leaves, again in the bark. By compression or subjecting these glands to heat, the essential oils contained in them is set free and thus obtained.

Among a great many kinds of perfume, the following are some of the best.

The best lavender water is prepared by distilling four ounces of the English oil of lavender with four pints of spirits of wine, and one ounce of rose water; when four pints have been distilled over the process is stopped.

A good lavender water, but inferior to the above in scent, and color, is prepared by dissolving four ounces of oil of English lavender in three pints of spirits of wine, and then adding one pint of rose water.

Here is a very fine perfume It is known as Queen's Boquet, (*Boquet de la Reine*). Dissolve the following essential oils in two hundred and twenty parts of rectified spirits of wine:— Oil of bergamot, five parts; essence of jasmin, six parts; essence of ambergris, essence of musk, and the best oil of English lavender, four parts of each; oil of neroli, two parts; and of the oil of cloves and verbena, one part each.

Another perfume of the same name, is composed of five parts of the oil of bergamot, two parts of the best English oil of lavender, and one part each of the strongest aromatic essence of musk, and oil of cloves, dissolved in forty-eight parts of rectified spirits of wine.

Still another pleasant perfume containing a large quantity of bergamot, is the following:— One drachm of the best oil of bergamot; fifteen drops of essence of ambergris, and seven drops eaeh of the essence of musk, oil of rose geranium, and oil of verbena, dissolved in four ounces of rectified spirits of wine.

A very fragrant perfume (*Boquet d' Amour*), is prepared in this way:—Take the essences of rose, jasmine, violet, cassia, two drachms each; of the essences of musk and ambergris take of each one drachm.

Eau de Boquet. —This perfume is prepared as follows:—Essence of violets and spirits of rosemary, half an ounce each; essence of jasmine half a drachm, and the same quantity of oil of bergamot; oil of verbena, fifteen drops, and the same quantity of English lavender, with fifteen ounces of rectified spirits of wine. When the whole are dissolved add five ounces of strong rose water, and half an ounce of orange-flower water.

The otto or attar of roses is the essential oil which roses yield when distilled in water, or by maceration in warm fat. The processes for obtaining this oil need not be described. The oil and the essence of roses are extensively used for scenting perfumes. Extract of roses is prepared by dissolving three drachms of the otto of roses in one pint of rectified spirit.

Eau de Cologne.— This celebrated perfume may be prepared either by distillation or by merely dissolving the materials employed in rectified spirits of wine. When the latter method is employed, it is very necessary that the essential oils have recently been prepared, and that they are free from color, so that the perfume may not only be as fragrant as possible, but be perfectly clear and limpid.

Another method of making this perfume is this:— Take a quarter of an ounce of the oils of lemon and bergamot, and half that quantity of the oil of orange peel, half a drachm of oil of rosemary and forty drops of the oil of neroli; dissolve them in one pint of the rectified spirits of wine. Add a few drops of the essences of musk and ambergris.

Excelsior Perfume is a fragrant compound composed of one ounce each of the essences of jasmine, rose, orange, and cassia, half an ounce of the essence of vanilla, two drachms of the essence of civet, and a drop of the bitter oil of almonds.

Care of the Hair.--Cleanliness of the hair and head is as necessary for this portion of the body as for any other if they are expected to remain in a healthy condition. In making the toilet, (and ladies should pay especial regard to this point), the hair should be arranged in the direction in which it naturally grows. There is an absurd fashion now in vogue of turning the hair about in diverse ways. Now if the hair is stretched in directions contrary to the way it grows naturally, the roots are strained, and the vigor of the hair injured. A superfluous amount of head gear is injurious as it makes the head hot, deranges the local circulation and leads to debility in the hair-forming apparatus of the scalp.

The hair should be well-washed at least once a week, but no strong soap should be used. A mild soap lather may be made and the head rubbed with the points of the fingers. Use tepid water. A little ammonia in the water is beneficial.

The object of brushing the hair is to remove dust and dirt, and stimulate the circulation of the head to a moderate degree so as to keep the hair follicles active and healthy. The scalp should not be brushed so hard that irritation is produced.

If the hair shows a disposition to split at the ends, have a tiny portion at the ends cut off.

Here are several approved washes for cleaning the hair: Rosemary hair wash is made by dissolving two drachms of pearlash (carbonate of potash) in one pint of camphor mixture. Add two ounces of rectified spirits of wine, in which twenty drops of the oil of rosemary have been previously dissolved.

Camphor mixture is prepared by breaking some camphor into pieces, tying them in a muslin bag, putting them into a bottle full of water, and allowing them to remain for a considerable time. Pour off the clear solution. Dissolve half an ounce of borax in a pint of camphor mixture, and wash the hair in it.

Bay-leaf hair wash is a good preparation for washing the hair. Take half an ounce of borax and the same amount of bicarbonate of ammonia, dissolve in one pint of rosewater (or common water will answer), and filter through blotting paper. Add to this two fluid ounces of tincture of bay leaves.

Pomades.— Pomades are useful to the growth and health of the hair. Nature has herself provided two little pomade makers, or fatty glands that open into the hair follicle, one on each side of the hair, for the express purpose of greasing the hair and the scalp. Thus it is plain that a certain amount of fatty matter is not only beneficial but necessary to the proper growth of the hair. Some persons do not need to use pomades but where the natural fatty secretions of the scalp is deficient, the head dry with a tendency to scurf, pomades may be used with benefit. When they are used, however, three things must be remembered: First, the head must be washed frequently; at least once a week to remove the old greasy material; second the pomade must be applied as evenly as possible to the head by various partings of the hair; third, the pomades must not be used if they are in the least degree rancid, or approaching thereto.

In the preparation of pomades one of the first objects is to obtain the fatty basis in as fresh and pure a state as possible. Lard, beef or mutton suet, singly or together are generally used. These are carefully selected, freed from any foreign matter, skin, etc., and then pounded in a mortar until all the membranes are completely torn asunder. This substance is then placed in a covered porcelain or polished metal pan and submitted to the heat of a water bath, which is continued until the fatty portion has liquified and the other matters have subsided and separated. The liquid fat is then carefully skimmed, and at once passed through a clean filter. In this state it can be perfumed to suit the fancy of the person making it. When in the liquid state the addition of a little benzine acid or gum benjamin will prevent rancidity.

Pomades and oils can easily be made at home. The following recipes are recommended. Beef marrow, reduced to the desired consistency, and scented with perfume, is the basis of good home-made pomatums.

Ordinary scented pomatum is prepared in the manner above described; that is by taking lard, beef suet or mutton suet, and treating them according to the above method, and adding two teaspoonfuls of essence of lemon to each pound of the fat. To obtain greater solidity, a little bees-wax or white wax may be melted with the fat.

Castor oil pomade is prepared by taking one pound of castor oil and four ounces of white wax, melting them together, and when cooling, adding any scent desired — bergamot, oil of lavender—with a few drops of ambergris.

Crystallized pomade is prepared as follows:—Olive oil, one pound; spermaceti, three ounces; melt together and then add to it essence of bergamot, sixty drops, and thirty drops each of the oils of verbena, lavender, and rosemary. Pour it into a wide mouthed glass bottle and let it stand undisturbed, for some time to cool.

Marrow pomade is made in this way: Melt together one pound of prepared beef marrow, half a pound of beef suet, and half an ounce of palm oil. Add any desired scent.

"Massacar" Pomade. Heat together and mix, five ounces of castor oil, one ounce of white wax, add thirty grains of Alkanet root; then strain and add oil of origanum, and oil of rosemary sixty drops each, oil of nutmeg thirty drops, and otto of roses ten drops.

Hair Brushes.— Here is a fact about hair brushes that should be remembered. However dirty hair brushes may be, they may be washed and kept good for years, without loss of stiffness, by putting a small handful of soda into a pint jar of boiling water. When the soda is melted, put in the brush and stir it about until clean. Rinse it in cold water and dry in the sun or by the fire. The quicker it dries the harder will the bristles be.

The Teeth.—From the highly important office that the teeth have to perform in ministering to the comfort and health of the body and the existence of life, aside from considerations of correct articulation and appearance, it would seem that people generally would pay very marked attention to their condition; but such is not the case. They are sadly neglected by a vast number of persons.

The teeth should be kept clean. This will prevent the accumulation of foreign matters, the formation of tartar, and keep the breath sweet and wholesome. The proper method of doing this is to give them a thorough brushing twice a day, passing the brush crosswise, and up and down over the crowns, so that every particle of food or dirt may be removed.

Unsound or diseased teeth should be treated and filled, or removed by a dentist. They should not be neglected. In the first place they are liable to cause excruciating pain, they foul the breath and disfigure the mouth. They take away the appetite frequently, and produce ulcers and abscesses, causing, also, disorders of the eye and ear, epilepsy, headache and other ailments.

The following solution, applied daily, preserves and beautifies the teeth, removes tartarous adhesions, arrests decay, produces a pearl-like whiteness and induces healthy action of the gums:— Dissolve two ounces of borax in three pints of water; before it is quite cold, add to it one teaspoonful of tincture of myrrh, and one tablespoonful of spirits of camphor; bottle the mixture for use. One wineglass full of the solution added to a half pint of tepid water is sufficient for one application.

When tartar has collected about the teeth in considerable quantity it should be removed by a dentist, and only by a dentist. The following lotion is recommended, to be used after the removal of tartar, to strengthen the gums: Tannin one scruple, brandy one half ounce, camphor mixture four ounces. Use as a wash night and morning.

Dentifrices.—The following is a good tooth powder and sweetens an unpleasant breath: Charcoal, finely powdered, one ounce; powdered cinchona bark, half an ounce; cream tartar two drachms otto of roses two drops; to be well mixed.

Another tooth powder is made in this way: Bone of cuttle-fish six ounces; cream of tartar, one ounce; orris root half an ounce. Mix.

PICTURES AND PICTURE FRAMES.

Care of Paintings in Oil.—It is a mistake to suppose that oil paintings and other pictures require no care, yet many persons seem to think so. They require attention to prevent injury from dust, smoke etc. Even dusting with a feather brush does not suffice for any length of time. Dampness, combining with dust, smoke, and gas, form an incrustation on pictures which a warmer atmosphere dries on and which the feather brush will not remove.

Oil paintings may be washed and thus cleaned of dust, etc., but not with soap and water. Soap is dangerous to them, as it contains alkili which combines with the oil, making a lather. Care must also be used in applying water to panel painting, for the preparation which is intermediate to the paint and the substance painted on is generally size and whiting, and it is easily affected by water.

Intense heat causes a serious injury to paintings, and valuable works of art are sometimes spoiled by its effects.

Light is the life of color, and hence the importance of hanging pictures in a good light. In dark places the colors fade, and in modern pictures become obscured by a film of exuded oil. When pictures have become faded or covered with the yellow stains of oil, the only safe course to take is to place them in the hands of a professional painter, or a conserver who will expose them carefully to the sunshine until the fading colors have revived or the film of exuded oil is dissipated. Experience and judgment are here required, for the too powerful rays of the sun will themselves cause some colore to fade. An equable, dry temperature and a fair, good light, are the conditions under which pictures are best preserved.

Gilding.—This is a simple process, and by knowing how to do it, pretty fancy articles of decoration may be ornamented, or old picture frames, etc., may be renovated. The article to be gilded must be painted over evenly with a coat of gold size, which is made by mixing well, finely powdered yellow ochre with parchment or isinglass size, till it is of a full yellow color. The materials, and a brush to apply them with may be had at oil shops or drug stores. Apply three coats of this size and let the first and second thoroughly dry before touching them over. When the third is nearly dry, but still sticky, it is ready to receive the gold leaf. Gold leaf may be bought in books ready for use. Purchase a brush of camel's hair, made for this purpose, raise the gold leaf, and with a light movement dextrously throw it on a cushion, (consisting of a small, flat board over which two or three layers of woolen cloth are laid), on which it is cut to the required shape with a knife sold for that purpose. If the leaf does not fall flat it may be got into that position by the brush aided by blowing with the mouth. Apply the leaf carefully to the sized article so that it rests flat, and with another camel's hair brush press it well, but gently, into all the crevices. To allow for such crevices let the gold leaf fall loosely or puckered, so that it will go into the crevices when spread. Burnishing is done by gently and briskly rubbing the gold with an agate burnisher, when it is dry. It is not advisable, however, for ladies to attempt this, but when the gilding is finished, and is thorougly dry, (a few days' time is required for this), they may give it the appearance of what is called dead gold, by washing it all over with a thin clear size.

To Revive Gilt Picture Frames.—One ounce of soda beaten up with the whites of three ounces of eggs; blow the dust from the frames with a pair of bellows, then wash them over with a brush dipped in the mixture, and this will render them fresh and bright.

To Gild Leather.— Apply white of egg with a brush, then lay on the gold leaf sold in books for gilding; and when dry burnish with an agate burnisher or with the tooth of some animal.

To Clean Picture Frames.—Take a piece of very soft rag, and having dipped it in a mucilage prepared by dissolving clear gum arabic in water, carefully remove all dirt and fly specks from the gilding. Do not rub too hard, otherwise portions of the gold will be removed. When the gilding is perfectly clean and quite dry, carefully varnish over the surface with the same mucilage by means of a camel's hair pencil.

To Prevent Flies from Staining Picture Frames. — Boil three or four leeks in a pint of water, and with a soft brush apply it to the frames. This will not injure the frames, and will prevent flies from alighting on them.

Hanging Oil Paintings. — It is very essential for the effects produced by pictures that they should be hung in a proper light. They should not be placed where they will be exposed to heat as they will be injured by wrinkles or blisters.

To Clean Looking Glasses. Etc.—Rinse a soft sponge in warm water and afterwards in spirits of wine, and clean the glass carefully with it; next tie some powdered blue in a muslin bag, and dust a little on the glass and rub it off as lightly as possible with a very soft linen cloth. Polish with another cloth, and afterward with an old silk handkerchief.

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